MANUFACTURERS RECORD

Angeles Public Library

STACKS

No Time For Nonsense

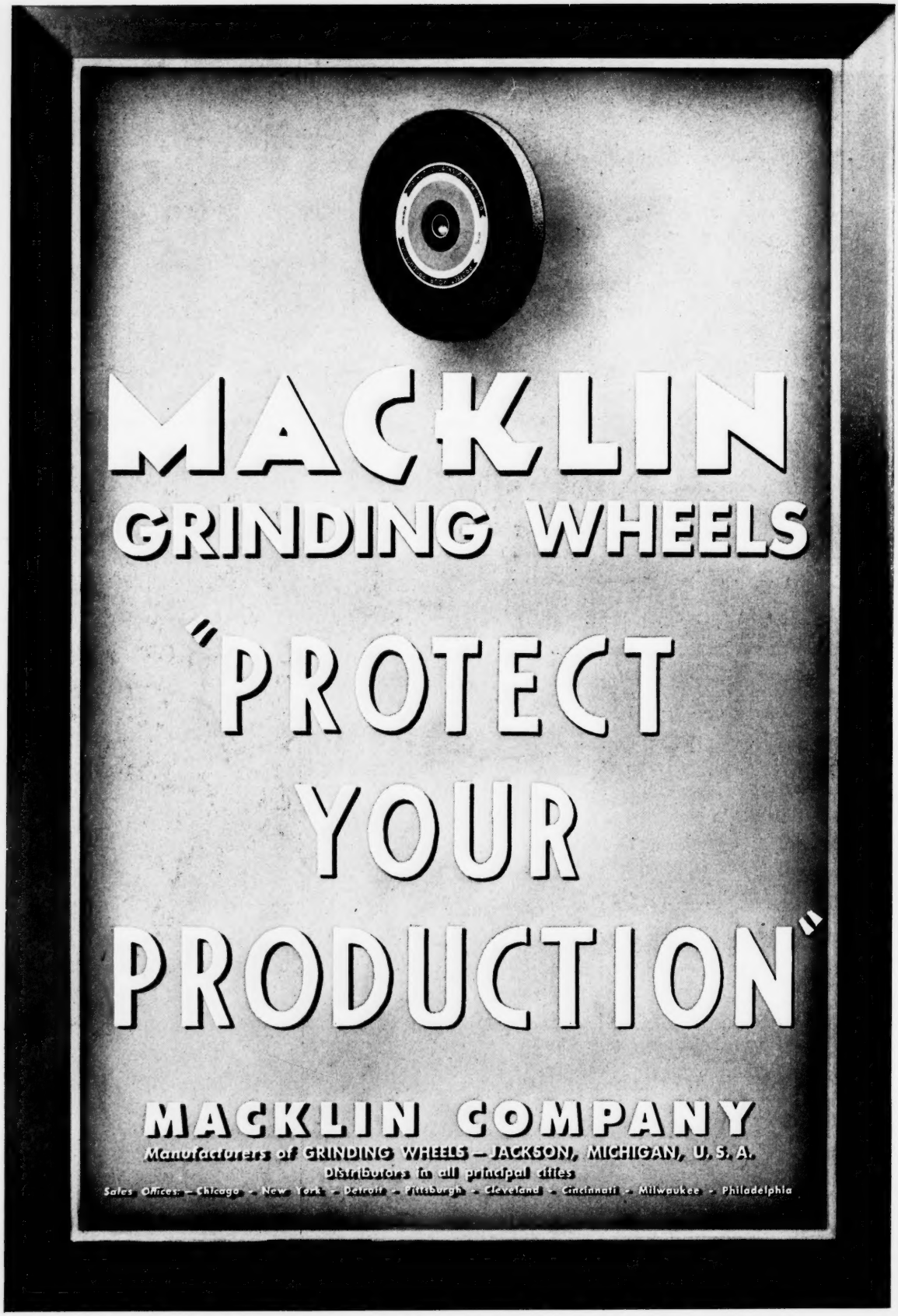
Private enterprise is as essential for the future development of America as it has been in the past.

It is vitally important to recognize this if our economy is not to be a vortex of socialism instead of what it should be—a vital force in the upbuilding of a war torn world.

We have no patience with criticism of the conduct of the war by our leaders and armed forces. The democratic way, however, demands full discussion of domestic political and economic problems.

Nonsensical theories by half-baked idealists divert the country from the war effort and are costing vast sums of money. They have no place in the present crisis and should be dispensed with forthwith.

XUM

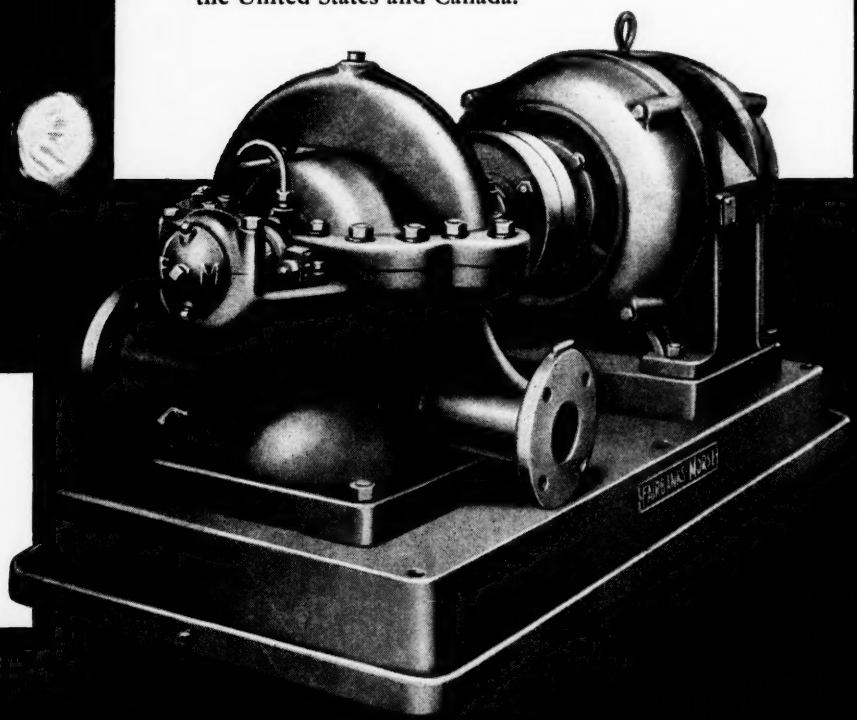

MACKLIN
GRINDING WHEELS
"PROTECT
YOUR
PRODUCTION"
MACKLIN COMPANY
Manufacturers of GRINDING WHEELS — JACKSON, MICHIGAN, U. S. A.
Distributors in all principal cities
Sales Offices — Chicago - New York - Detroit - Pittsburgh - Cleveland - Cincinnati - Milwaukee - Philadelphia

Guards Are Futile Against THIS Sabotage !

RIGHT under your guards' noses, unsuspected saboteurs may be steadily draining off vitally needed power... handicapping production as much as would destroying one generator out of every four or five!

These unsuspected saboteurs *are* at work in your plant if your pumps are not of the latest, improved designs. For ten-year-old pumps of certain types, even if as good as new, require 25% more power than today's Fairbanks-Morse models. And 4- or 5-year-old pumps of other types consume so much more power than current models that continued use is more costly than replacement.

Find out *now* if *your* pumps are the types which curtail production and steal power and profits. Let a Fairbanks-Morse Pump Engineer make an inspection, with no cost or obligation to you. Write Fairbanks, Morse & Co., Dept. E93, 600 S. Michigan Ave., Chicago. Branches and service stations throughout the United States and Canada.



FAIRBANKS-MORSE CENTRIFUGAL PUMPS

A complete "family" of single-stage, split-case pumps for low, moderate, medium, and high heads, is described in Bulletin 5810D. Many other bulletins available on other types.

FAIRBANKS·MORSE PUMPS

DIESEL ENGINES ELECTRICAL MACHINERY MAGNETOS RAILROAD EQUIPMENT WASHERS-IRONERS STOKERS
PUMPS MOTORS FAIRBANKS SCALES WATER SYSTEMS FARM EQUIPMENT AIR CONDITIONERS

XUM

SWEETER THAN SWEETS IS FREEDOM

When you look at your ration card, remember — Food less sweet is still much sweeter than slavery.

Our limited supply of sugar must be conserved because—

. . . ships must be released to transport men and supplies to far-flung battle fronts.

. . . sugar is an essential energy food for our fighting men and those of our allies.

. . . sugar-cane products are of great importance to successful prosecution of the war.

Sugar eaten in slavery would be a bitter potion indeed.

Cut your sugar consumption even below the allowable ration and thus make doubly sure your food will always be flavored by the precious sweetness of liberty.

When you look at your sugar ration card, smile . . . smile sweetly—so you may appreciate to the fullest your right and your liberty to smile!

UNITED STATES SUGAR CORPORATION

CLEWISTON, FLORIDA

"In the Heart of the Everglades"

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MAY, 1942
Volume 111, Number 5

EDITORIALS

FEATURE ARTICLES

DEPARTMENTS

MANUFACTURERS RECORD

Devoted to the Upbuilding of the Nation Through the Development of the South and Southwest as the Nation's Greatest Material Asset

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Member A. B. C.

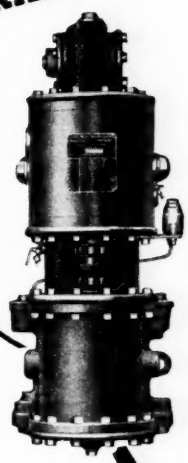
Entered as second class matter at the postoffice, Baltimore, Md., U.S.A., under act of March 3, 1879. Volume 111, Number 5 Monthly

Before You Buy

Investigate!

AIR COMPRESSORS by Westinghouse AIR BRAKE CO.

ONE of the MANY Types



Single Stage Steam Driven

Sturdy locomotive type. Gives long-time service for factory use. Easily installed on post, wall, or stand. For 80 lbs. air and 100 lbs. steam. Sizes 35, 49, and 66 cu. ft. Larger size available, 150 cu. ft., two stage type. » » » » »

Also many types of motor driven compressors up to 200 cu. ft., having exclusive features, and noted for economy, reliability, and durability. »

Write for Literature and Prices

70 Years Experience

Westinghouse . . . .
AIR BRAKE CO.
Industrial Division
PITTSBURGH, PA.

HEAT-FAG and ACCIDENTS Ride Together

BEWARE of Heat-Fag . . . that dangerous, insidious force that saps the vitality of workers — brings on fatigue — and in many cases is the direct cause of accidents. Man-hour protection *must* precede production. When men sweat, they lose body salt. As the natural salt balance in the system is disturbed, there is a definite lowering of efficiency. The worker tires — becomes inalert — careless. A slight mistake and—another costly accident is chalked up. Heat-Fag again takes its toll.

AVOID HEAT-FAG—USE
MORTON'S
SALT TABLETS

QUICK DISSOLVING (less than 30 seconds)
This is how a Morton Salt Tablet looks when magnified. Examine one—see how soft and porous it is inside. When swallowed whole — with a drink of water, they dissolve in less than 30 seconds.

Wherever workers sweat, Salt Tablets are needed, for they represent the simple, easy way to replace salt that's lost through sweating and hot work.

Case of 9000 10-grain salt tablets **$2.60**

Salt-Dextrose Tablets, case of 9000 **$3.15**

Order from your distributor — or directly from this advertisement.

Place MORTON'S DISPENSERS at all Drinking Fountains

• • •

They deliver salt tablets, one at a time, quickly, cleanly—without waste. Sanitary, easily filled, durable. 500-tablet size, $3.25. 1000-tablet size $4.00

MORTON SALT CO., Chicago, Ill.

FREE Sample Tube
Write—on your firm letterhead — for a pocket size sample tube of Morton's Salt Tablets and for the new folder — "Heat-Fag and Accidents Ride Together."

EVERYONE WHO SWEATS NEEDS SALT

Things that interest us

—o—

WE would like to know why the people in some states will go unrestricted while those in other states —often adjoining—will be limited to a mere three gallons of gasoline per week? Why should the people on inland waterways and railroads be given special privileges when these transportation facilities—at a cost it is true, can be used to equalize the burden that should be placed on all of us alike, not just a few?

Gasoline rationing, or any other kind of rationing for that matter, should not be restricted to any section or area of our country. This is a united nation, and when necessary, we should bear equally any hardship that needs to be imposed.

It is time that our so-called national planners start to think—and act, on a national plane.

WE have group insurance. In many organizations we have group medical care. Why not group legal assistance?

Many a man through lack of experience and the threat of prosecution has yielded his constitutional right which entitles him to a fair trial. Many a man has fallen into the hands of a shyster member of the bar who has defended him to his cost rather than to his profit.

Any intelligent lawyer in any community could establish such a plan. He would do a praiseworthy work and be paid for it. He would make real friends and exert a powerful influence among them. He would earn a reputation the right way.

MAGAZINE and newspaper men are frank among themselves in criticizing many of the publicity bureaus. The Office of Facts and Figures, in its leading role among these governmental propagandist organizations has been the principal target.

In defense of these tax paid publicity pushers it is only fair to say that they have a hard job. They are trying to explain the unexplainable to the public. They are trying to create an impression of unity amidst disunity in political affairs, of efficiency in the midst of waste. If their efforts were devoted to pointing out to their chiefs the faults that they are trying to cover up they would render the nation a real service. But then having done their work they might lose their jobs.

THE arbitrator in a recent "case" decided that an employee's earned vacation is a property right and may even outlast the life of a labor contract. In this

decision it was ruled that employees on strike within their vacation periods were entitled to vacation pay even though they may have spent that vacation in picketing rather than in recreation.

If this is not killing the goose that lays the golden eggs, what is it?

ALBERT P. SMITH, Jr., grandson of Major Rutledge Smith of the Tennessee Central Railway Company, and the nephew of McGregor Smith, president of the Florida Power and Light Company, Miami, is the winner of the first prize of the American Legion nation-wide high school oratorical contest, and is believed to be the youngest boy ever to have won this award. He is barely fifteen years old.

There were 125,000 students from all sections competing.

The Milwaukee *Sentinel* in reporting the occasion says: "A Tennessee farm boy with journalistic aspirations won the national American Legion high school oratorical contest Thursday. He is Albert P. Smith, Jr., of Hendersonville, Tenn., pop. 300. With the $4,000 scholarship which is his by the judges' decision at the finals in Shorewood High school, he reckons he will go to Vanderbilt university. But he will have to wait a spell. Albert is only 15, a sophomore at the Hendersonville High school."

Albert P. Smith, Jr.

The three other winners of prizes for smaller scholarships were all 17 years old and seniors. Each of the four had won his sectional contest, which certified him for the finals.

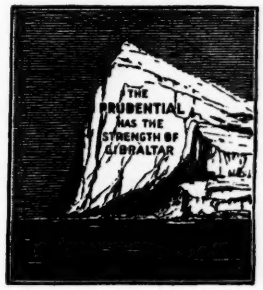
OF course we did not approve of the way the Congress attempted to grab pensions for its members a few months ago but we do think that there is some

(*Continued on page* 8)

When Dollars Loom Large

The dollars a man puts into life insurance have greater dimension when they return to his family as claim proceeds.

Dollars look largest when needed most.



The Prudential
Insurance Company of America
Home Office, NEWARK, N. J.

Defensive action will not win this war for the United Nations. Long-term plans for aggressive action have been made obsolete by the lightning-speed victories of powerful enemies.

For America and her Allies, there remains only one road to victory — swift, smashing, daring offense. The power and size of that offensive, and its ultimate result, will depend upon one thing — how much better the people of America can do the job at home in the critical months ahead. Every possible man-hour of work is desperately needed to speed up the production of tanks, planes, guns and ships. Production can, must, and will be increased. Every fighting machine turned out today is worth a thousand times more than those which might be produced next year. The next great crisis of the war is approaching. The time is short.

The American railroads are in this struggle with everything they have. With them, the war comes first. And with them, it will continue to be first until they have moved the last fighting man and the last fighting machine for the final offensive that will smash the enemies of this nation.

Norfolk and Western Railway

Things that interest us

(*Continued from page 7*)

merit in the idea that once a man is elected to Congress he be guaranteed his congressional salary for life.

Such a plan would cost the taxpayers money it is true, but that would be a drop in the bucket to the money that is now being spent by the same Congressmen in log rolling to try to secure reelection—money that would be saved.

It is an idea worth thinking about because it would be an incentive to able men to go into politics and once elected it would place them in a position to exercise their judgment and ability independent of pressure from any source. In other words it might restore representative government.

JUST a part of a letter from a reader who sees beyond tomorrow.

> For some time I have been thinking that you should institute some kind of a running series of articles on post war problems, one every month or two. If we leave the settlement of this war to politicians such as ....., or ..... we will have a depression that will make the last one look like prosperity. The time is here when we should face some of these problems and deal with them. We have passed the buck for twenty years. Americans and Englishmen hate to make decisions and commit themselves, so many things work out in time that we have come to rely too much on events shaping our policies. The moment this war ends all of our domestic problems will still be with us, only more so.
>
> Thoughtful men realize now more than ever before that they must take on these added worries and think about them and try to solve them in addition to their present problems.

THE following is the report of a colleague after his recent trip to Washington. It is offered here without comment.

> Because I've been to the War Board's office in Washington many times and seen how they continually shift offices around, I was fairly well inured to the changed appearance of things when I went there last week. Usually, the changes are not readily apparent, but this time I spotted the fact as soon as I got inside the main entrance.
>
> The purpose of any visit was to get a few photographs from the Photographic Section of the Information Division, which latter has been located on the fifth floor for some long time (but in several different offices). As a precautionary measure therefore, I asked at the "Information Office" where the Photographic Section was located. Promptly came the answer "Oh! they have been moved to the Railroad Retirement Board Building." Trustfully, I went my way only to find on arrival that they had never heard of such a thing as the Photographic Section. Tele-

phonic inquiries were similarly unhelpful so I returned to the mammoth Social Security Building which has seen naught of Social Security to date (for once, a New Deal agency has been obliged to await the demands of another bureau. Seeking out from the several young ladies present, the one who waited on me previously, I pointed out that the Photographic Section was *not* where she sent me. Apologetically, she said she would try to locate it or its chief or assistant chief—both of whose names I supplied.

Meantime I walked into the nearby Press Release Office, hoping I might find someone I knew who could enlighten me. A young lady asked if she could help me so I repeated my request. She too, wanted me to go to the Railroad Retirement Board Building but I'd had enough of that place. (I wonder if I missed something worth while at that place or do they merely send people there to get rid of them?) I tried hard to explain the functions of a photographic section and that that is where one obtains photos for reproduction in newspapers and magazines, but apparently the lady had never sceen a product of the press for she said she had never heard of such a thing as a photographic section. Groaning aloud, I asked for Bob Horton, chief of the Division of Information. Again the lady's reply was negative for she had never heard of the man and suggested "you might find him up at Mellet's Madhouse." She seemed rather surprised when I pointed out that Bob Horton was her boss.

Disconsolately I went back to the Information Desk and inquired again. After much telephoning I was then told that the Photographic Section had been moved to Delaware Avenue in á disused roller skating rink. Unbelieving, I went to a public call box (you musn't use an official phone at the information desk) and after much difficulty with the telephone information division of WPB who also denied for nearly ten minutes that there was a Photographic Section, I got through eventually and heard a familiar voice; it was actually the man I had been hunting so long. In a sympathetic, understanding manner he told me that the Photographic Section still existed and that it was now located on Delaware Avenue. It was almost too much for me but I *did* get my pictures.

I'm now wondering if the Photographic Section has again disappeared.

Happily I went on my way to another division of WPB and while waiting for the material I wanted, I recounted the above story. When I was through the man asked me "who is Bob Horton?" "He's your boss too," I replied, but the fact that he had only been on the job for six weeks seemed to him sufficient excuse for not knowing who his boss was.

From the WPB I went to the War Dept., for two more pictures. This time I was luckier however. I only had to see three people so it only took me just over an hour and I only had to walk the entire length of the Munitions Building twice. And oh! yes, I nearly forgot to mention that I did not get the photos—the ones I wanted couldn't be found.

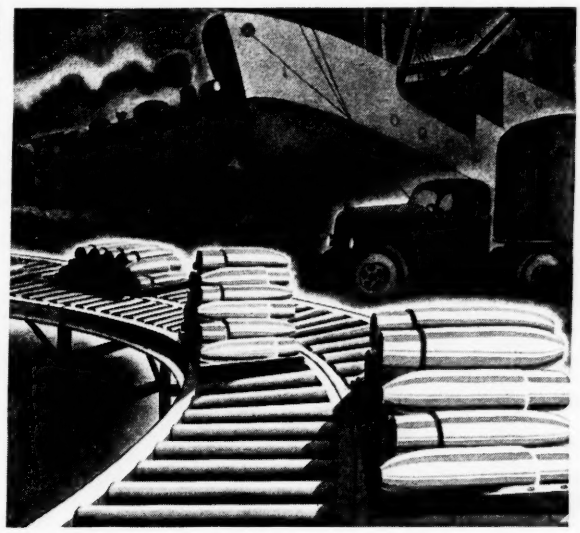
SYNTHETIC rubber is a subject that is uppermost in the minds of most people today. For this reason, we are including two articles thereon. One of these articles deals with a new agricultural source of materials from which the ersatz product may be made while the other, deriving its source of supply from the mineral kingdom, treats largely with the matter of equipment materials and other problems incidental to plant construction.

Prime movers

FOR AMERICAN WAR PRODUCTION

● The great units of America's transportation system, her trucks and trains, depend heavily upon another transportation system to keep them rolling — the modern conveyer system. Without conveying equipment to speed materials to and from processing machinery, and into the cars and holds of ships, the transportation of vital war material would slow down considerably. Ships would remain longer in port — carloadings would fall off.

Long Mathews engineering hours are devoted entirely these days to the development of equipment for handling war material so that our prime movers can get it to where it is needed in less time.



MATHEWS CONVEYER CO.

ELLWOOD CITY, PA.

If you are manufacturing war material, or anything vital to the success of the war effort, you can get Mathews Conveyers to handle that material. Rely as usual on your Mathews Engineer.

MATHEWS CONVEYERS FOR MECHANIZED PRODUCTION

Get Your Ingots Ready...

FLEXOMOTIVE

Will Haul 'em

● Today's the day to do the job . . . not tomorrow. Every minute counts. Plymouth Flexomotives are doing the job . . . keeping the loads ahead.

Weight for weight — horsepower for horsepower Plymouth Flexomotives will outpull any Diesel locomotive ever built.

Have you a Diesel Locomotive in your mill that will go six months in continuous duty with only three hours out for repairs other than regular greasing and servicing?

Drop us a line . . . we'll tell you who are using Flexomotives.

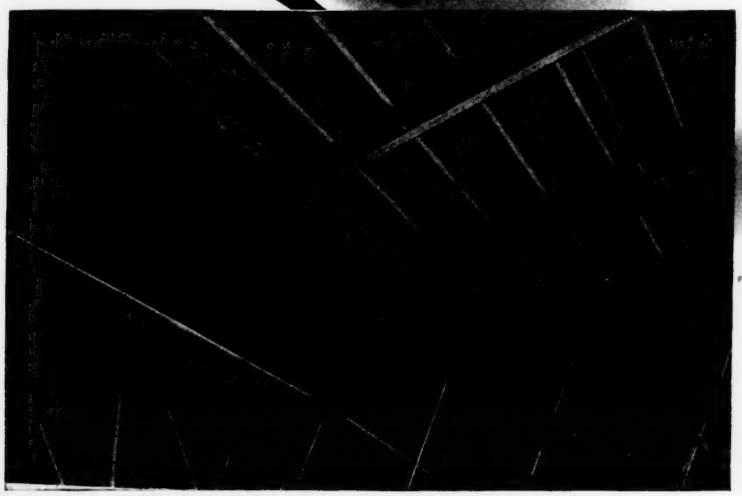
PLYMOUTH FLEXOMOTIVES

FOR COMPLETE BULLETINS WRITE ☞

PLYMOUTH LOCOMOTIVE WORKS
Division of THE FATE-ROOT-HEATH CO.
PLYMOUTH, OHIO • U. S. A.

MAINTENANCE -

. . . on an impermanent roof deck CASTS ITS SHADOWS BEFORE

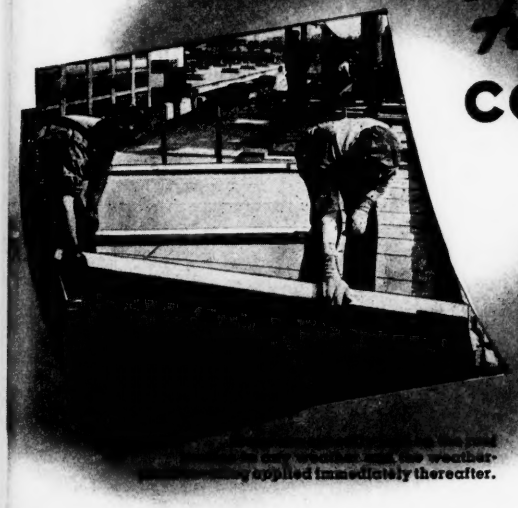


Showing the smooth, finished ceiling effect provided by the [illegible] the roof slabs.

You Can Eliminate Those Costly Coming Events . . .

PAINTING—REPAIRS REPLACEMENTS

by Choosing a Permanent



[illegible] applied immediately thereafter.

Featherweight PRECAST CONCRETE ROOF DECK

The time to guard against future cost burdens on a roof deck, is at the time the roof deck is selected.

If the material is subject to rot, rust or disintegration, that roof deck is sure to be a liability throughout its entire short life. Painting, repairs, replacements become a certainty—add *extra* costs to the original price of that roof deck.

A FEDERAL ROOF IS PRECAST CONCRETE—there is never a dollar of maintenance expense at any time. You pay for it once and once only. You buy it with that thought in mind—install it—and forget it.

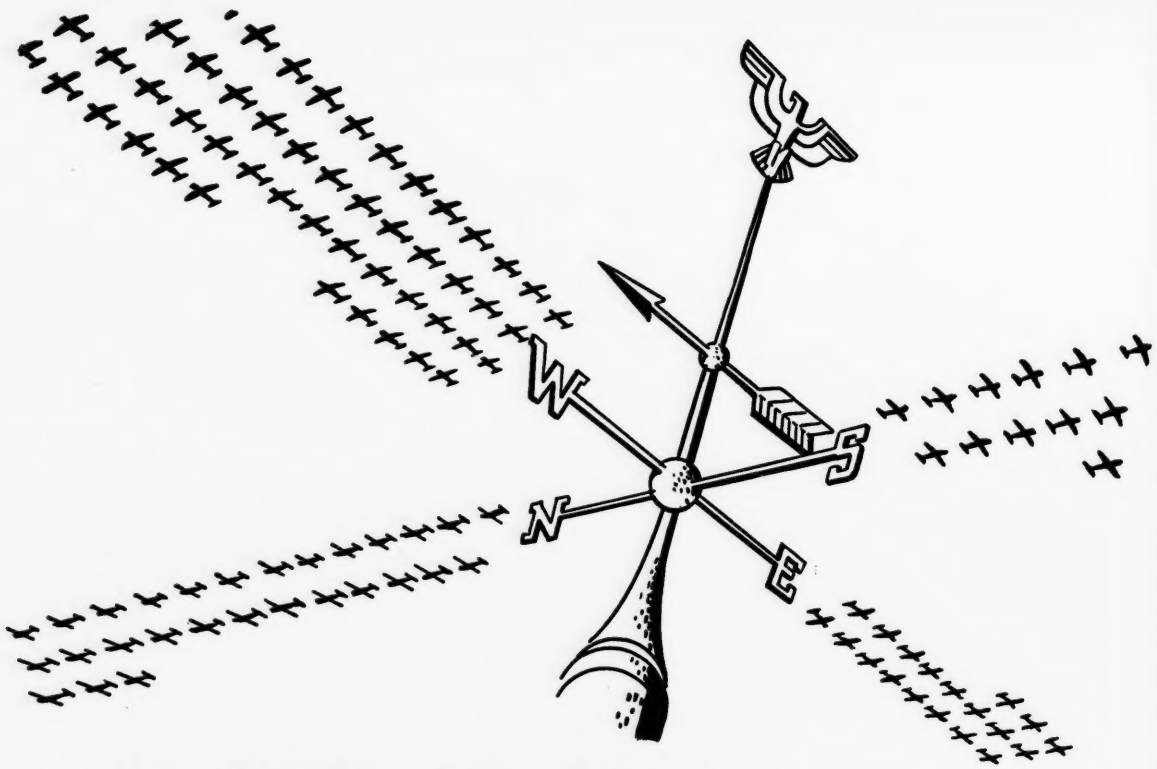
Federal Roofs erected during the last war are still serving industry in this war, with the same permanent, fireproof, no-maintenance protection. Catalog on request.

Prompt Service From Our BIRMINGHAM, ALA. Plant

[illegible] CEMENT TILE CO.

[illegible] Years — Chicago, Illinois

[illegible] YORK - PITTSBURGH - BIRMINGHAM



SO MUCH SO SOON

Let not the promise contained in the great new plants we are still building obscure the even more important fact that the tide of aluminum for the war is already at flood stage.

You can't actually count the planes. But you *know* they're winging away in mighty swarms. The Axis knows that, too, and well.

Nor do you see all the other places aluminum is serving in the war. This *is* a light metal war, in more ways than properly meet the eye of the civilian.

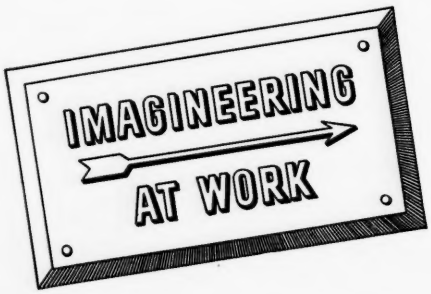
But it is proper, and timely, for Americans to glory in *so much* aluminum, *so soon*. We, ourselves, get a genuine old-fashioned thrill out of keeping ahead of higher and higher objectives.

We are doing that, and we intend to keep on doing so. Nothing in our power is permitted to stand in the way.

Production that doubles and is in the process of doubling again in so short a time takes more than dollars, and man-hours, and know-how. Getting started early, planning audaciously, building and producing furiously: that was and is Imagineering at work for the war.

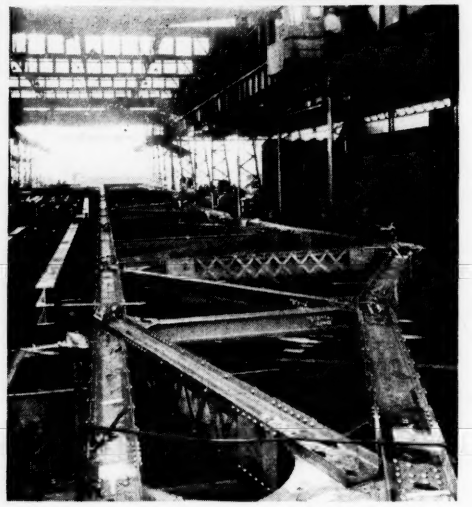
The same brand of Imagineering, catching the needs of the future in the mind's eye, and pinning them down to earth for future reference, is the great force that will make the new jobs needed when the boys come back. We hope and believe that Alcoa Aluminum will have an equally great part in the good world they are fighting to come back to.

ALUMINUM COMPANY OF AMERICA, 2109 Gulf Building, Pittsburgh, Pennsylvania.



ALCOA ALUMINUM

ANOTHER STEEL HIGHWAY LINK TO KEEP THEM ROLLING



Shop assembly of the continuous truss spans insures against erection delays on the job.

This 1100-ft. steel link, consisting of beam spans, continuous truss spans and cantilever arms, connects an important highway to serve a community on the move industrially. Pushed to completion in spite of winter winds and snows, it is now ready to give traffic the green light over the broad stream and two railroad lines below.

And so another link has been added to the long chain of Virginia Bridge steel structures extending clear across the country to serve a nation in motion. During the nearly fifty years spent in the forging of this chain Virginia Bridge has won national recognition as one of the three largest and most experienced bridge builders in the United States.

Virginia Bridge

STEEL STRUCTURES
ALL TYPES

Roanoke Birmingham Memphis
New York Atlanta Dallas

VIRGINIA BRIDGE COMPANY

UNITED STATES STEEL

Aerie for fighting eagles

Large numbers of fighting planes for the United Nations will soon be rolling off the assembly lines of Southern aircraft factories each month. These aeries for fighting eagles — plants where planes are completely built and assembled, as well as giant assembly plants—are strategically located throughout the Industrial South.

This great expansion of the South's activities in hatching the birds of war is typical of Southern war effort. Manufacturing of all kinds of war materials, power production, agriculture, refining, textile-weaving—activities in all these fields have reached new peaks.

For many years, Bethlehem Steel Company has furnished a full line of steel products to the entire range of Southern industry and agriculture. Today, with the South occupying an increasingly important place in the war production of the nation, steel products from Bethlehem plants are flowing in ever-increasing volume to the aircraft factories and other industries of the South.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY

Planning a Pressure Pipe Line?
CONSULT A CO-EFFICIENCY EXPERT

He'll tell you:

"To maintain a permanently high carrying capacity your best pipe line investment lies in concrete."

And your first choice would naturally be Lock Joint Reinforced Concrete Pipe. Its dense, concrete walls form an unrelentingly smooth line of defense against Tuberculation and Corrosion, the aggressive surface diseases that with time attack and cripple most water supply lines. Tuberculation and Corrosion cannot leave their mark on Lock Joint's moulded concrete, cannot impair the hydraulic efficiency of these pipes.

Lock Joint Pipe does maintain a high carrying capacity for life but its very construction and design insure longer life, longer serviceability. Encased within the protective coat of concrete lies a water-tight steel cylinder, reinforced by encircling steel bars. This is the backbone, these are the ribs that enable each Lock Joint Pipe to withstand indefinitely the forces of pressure, weight and shock. A more useful life—and a longer one!

Whether your project is large or small, your 'phone call, telegram, cable or letter to any of our offices will bring an immediate response.

LOCK JOINT PIPE COMPANY

Established 1905

AMPERE, NEW JERSEY

Denver, Colo. • Chicago, Ill. • Kenilworth, N. J. • Kansas City, Mo. • Rock Island, Ill.
White Plains, N. Y. • Valley Park, Mo. • Cleveland, Ohio • Hartford, Conn. • Navarre, Ohio

LOCK JOINT
Reinforced Concrete
PRESSURE PIPE

SCOPE OF SERVICES

Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply Mains as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous lines.

TWO WAYS TO GET MORE OUT OF YOUR PRESENT BURROUGHS MACHINES

Today, when it is so essential to make the best and fullest use of the figuring and accounting equipment you now own, and to make that equipment last you as long as possible, Burroughs offers two extremely valuable and timely services to Burroughs owners.

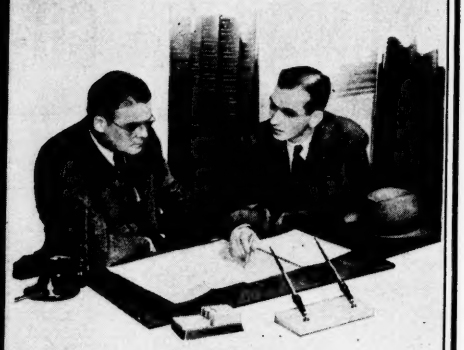
Both Burroughs advisory service and Burroughs mechanical service have been time-tested throughout the years, and are nationwide.

They are available to you through your local Burroughs office, or by writing—

BURROUGHS ADDING MACHINE COMPANY
DETROIT, MICHIGAN

Burroughs

BUY UNITED STATES DEFENSE SAVINGS BONDS AND STAMPS



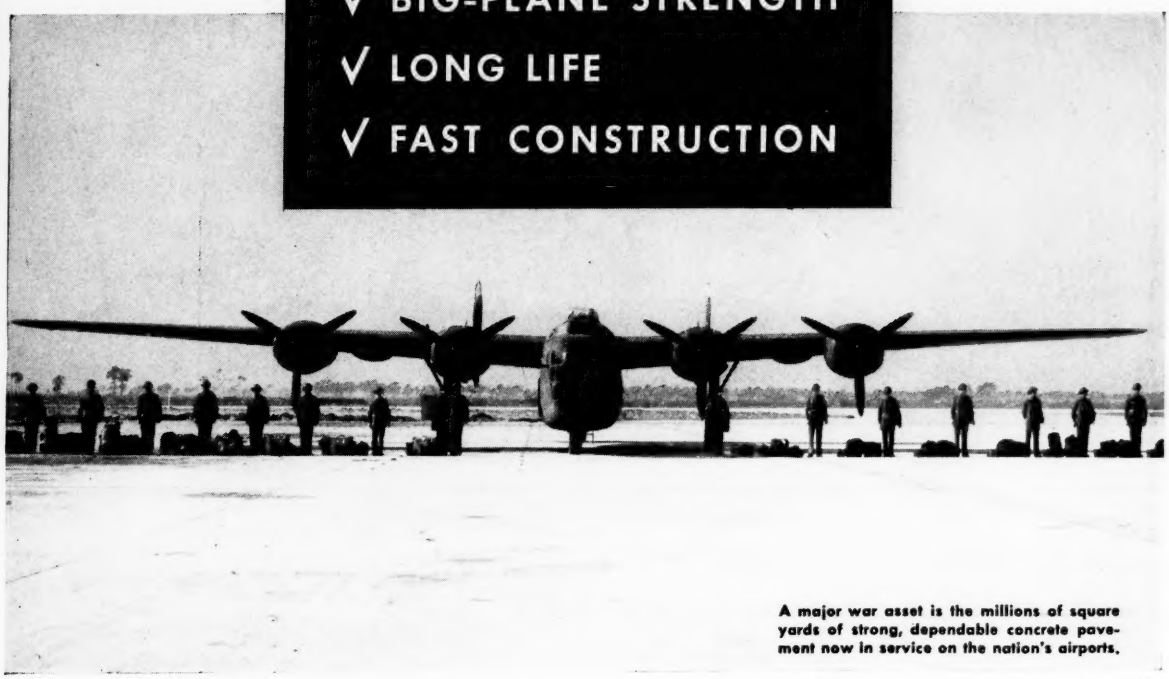
BURROUGHS ADVISORY SERVICE

Burroughs technical advisory service is rendered by men trained and experienced in systems and in the installation of machine equipment. Their knowledge of machines, applications and procedures is especially valuable in meeting today's changing conditions . . . suggesting operating short-cuts that save time . . . finding ways to handle related records in a single operation or to obtain vital statistics as a by-product of necessary posting.

BURROUGHS MECHANICAL SERVICE

Burroughs experienced mechanical service is rendered by Burroughs' own salaried, factory-trained, factory-controlled men. These men inspect, lubricate and adjust Burroughs machines. They make repairs and replacements with genuine Burroughs parts. Their work is guaranteed by Burroughs. Conveniently located throughout the nation, Burroughs service is available in the shortest possible time.

✓ BIG-PLANE STRENGTH
✓ LONG LIFE
✓ FAST CONSTRUCTION



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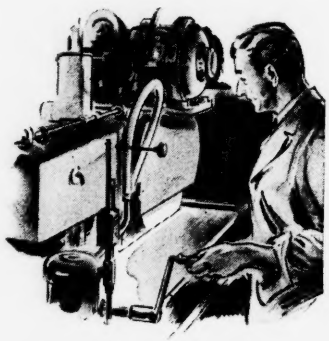

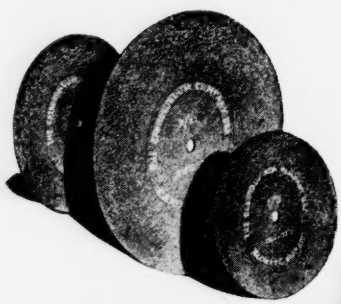

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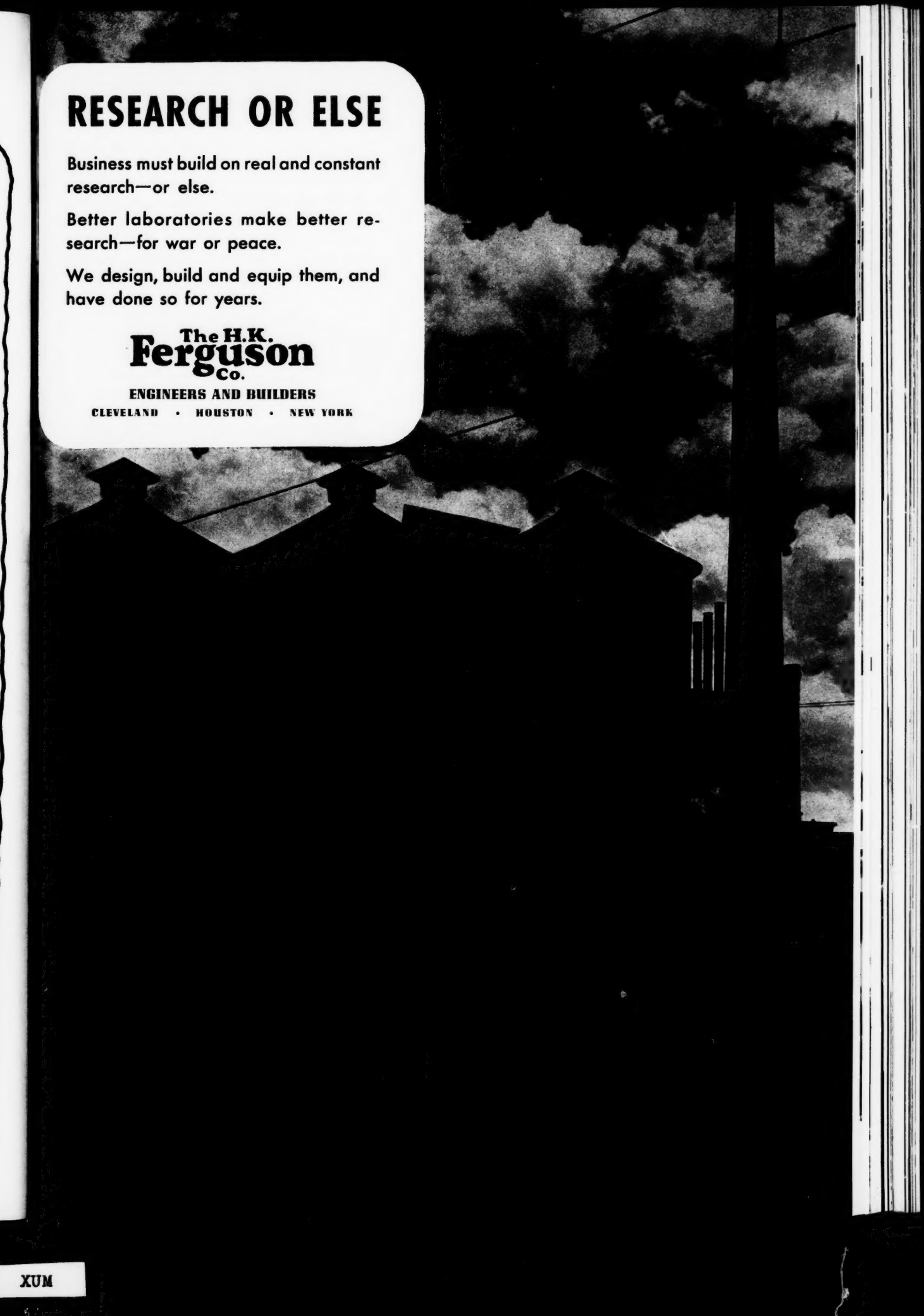

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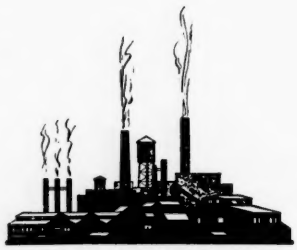

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IT is hardly necessary for us to tell our customers that it is becoming increasingly difficult to fill their orders as promptly as we should wish. The effects of the complex influences at work in the war production program are now well understood. Our products and the materials from which they are manufactured are on the critical lists, and are subject to priority control with its unavoidable delays and disappointments.

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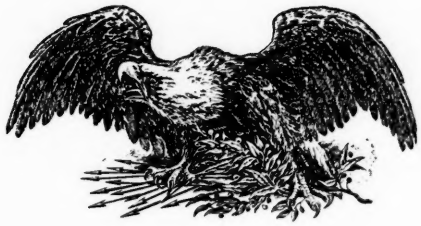


WAR

The Army, Navy, Marine Corps and Coast Guard know that this nation is at war. The AMERICAN PEOPLE know that they are at war. It is high time that politicians, and the acolytes, satelites and parisites that follow, surround and infest them should realize that a war is not won with adjectives but by action.

There is no such thing as "total" war or "all out" war. War is WAR. It can't be amplified. It has to be experienced. Ask the man who carried a rifle and a can of monkey meat during the last one. Ask the boys and girls who are boys and girls no longer but men and women who have seen action in this war. Total war, all out war—poppycock. It is war.

And while these boys and girls of ours grow old in a few days or weeks, while older men and women go about their jobs earnestly and with but one purpose what are their leaders doing? Labor leaders are only trying to lead labor. Farm leaders are only trying to lead farmers. Trade association leaders are only trying to lead their particular line of business. Political leaders are trying to face three ways at once and please each group. Leaders? Bosh!

It is time for all of us to let the salaried racketeer, the comfortably placed organization secretary, the peanut politician know that we are Americans first, and farmers, laborers, business or professional men second and not a close second at that.

It is time RIGHT NOW.

RAYON'S ROLE IN THE WARTIME ECONOMY

By

Dr. F. Bonnet

Textile Research and Standards Laboratory,
American Viscose Corporation

LAST year (1941) some 586 million pounds of rayon were consumed in this country, which was about 100 million pounds more than in 1940 and this was more than the total consumption of scoured wool (both apparel and carpet) for that year. This places rayon, of which the South produces over 70 percent of the country's output, next to cotton as the most important textile fiber now consumed in this country.

The importance of the natural fibers in war times seems to be quite well understood by the general public but exactly where in this emergency rayon stands may not be so clear. This may be due in part to the rapid growth of rayon and in part to the fact that rayon advertising over the years has largely stressed its qualities of softness, of smoothness and of texture in rayon fabrics, that is to say, the esthetic appeal, rather than some of the "he-man" qualities of its strong tough types so exceedingly useful in the present war emergency.

Increasing Wartime Demands

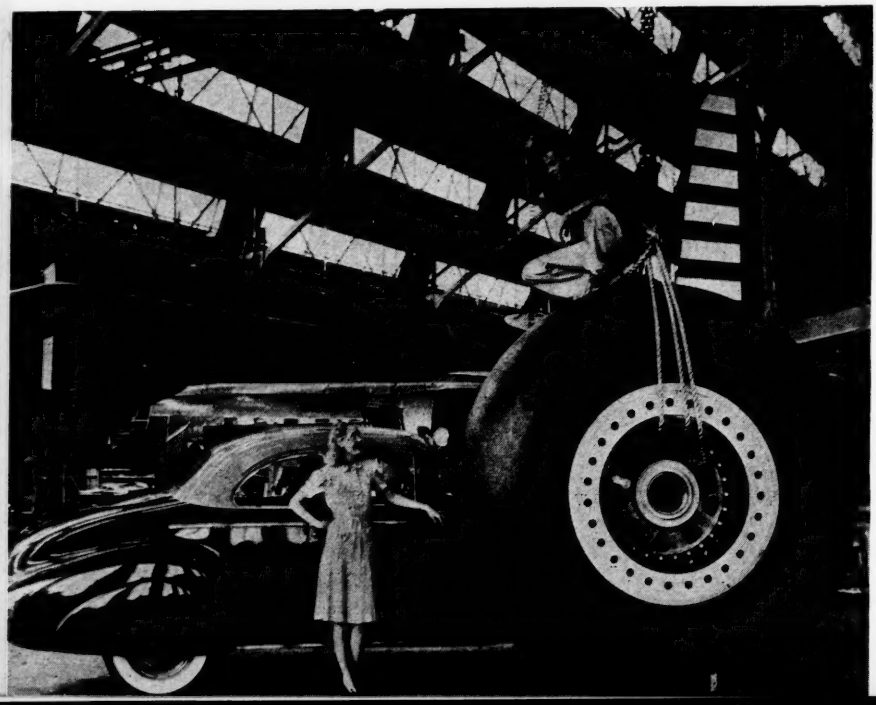
The large increase in U. S. production and consumption last year was not due to any major developments in the fiber itself nor to any specially new applications. It merely reflected the normal expansion of regular rayon markets already established to which, however, the increasing amounts demanded for wartime purposes must be added as we shall see. For example one of the large peace time uses for regular rayon is for lining fabrics for men's suits and overcoats. Therefore, when the armed forces were being greatly increased by enlistment and selective service, the government placed such large orders for lining fabrics that the effect was a decided tightening up on certain grades of standard yarns used ordinarily for civilian use.

The services also required a large fabric yardage for special helmet linings; and still more yardage for neckerchiefs. Large government orders were also placed for hat cords; arm band insignia; chevrons, and other army, navy and marine corps decorations all made of rayon. These illustrations will serve to indicate how quickly the rayon industry was called upon to supply some of its regular yarns for government needs.

"He Man" Types of Rayon

However, all these uses, although requiring large volumes of regular or ordinary types of rayon are perhaps commonplace and perhaps fairly well known and understood, but this is not all, because in recent years and before the present emergency had arisen, special types of rayon had been developed which were particularly characterized by their relatively high strength and toughness, the "he-man" types referred to above. These are of increasing importance in our war effort.

One of these strong types has most successfully been used in tire cord fabric and actual commercial experience with tires built with such fabrics during the past four years has been astounding. Thus, a transcontinental bus line is reported to get some 300,000 miles on a set of rayon cord tires with seven retreads. The cords in these tires are made of strong continuous filament rayon yarn, which due apparently to their smoothness as compared to any short fiber spun yarns, develop less internal frictional heat so that there is less deterioration both of the rubber and the tire fabric on the hard "murder runs" of heavy trucks and buses. The tires last longer and give correspondingly higher mileage. In consequence rayon cord tires can be made with



A contrast in peacetime and wartime use of rayon, as well as contrast in size, is seen in the picture at left where the young lady, dressed in rayon clothes, is dwarfed by the huge tire, two of which are used on the 82-ton Douglas B-19 bomber. In the 96-in. diameter tire, nearly 150 miles of special extra strong rayon cord is used. (Douglas Photo from OEM.)

The use of rayon in war is constantly expanding. In the picture shown at right, all these men are wearing articles of rayon. Stripes, insignia and coat linings are all made of rayon and now it seems likely that this cellulose product will find its way into coats, blouses, trousers and overcoats, as a blend with wool, while rayon's use in place of silk, is also being tested for cartridge cloth from which powder bags are made. (OEM Photo.)

thinner walls, entailing a great saving in the amount of rubber required per tire.

Rayon For Bomber Tires

So successfully tough have these rayon cord fabrics been found to be, that they are now standard equipment in the landing gear of the eighty-two ton Douglas B-19 bombers. The two large tires each contain nearly 150 miles of special extra strong rayon cord, the same as is now commonly used in heavy duty trucks and bus tires. The ability of these tires to withstand safely the punishment to which they are subjected while carrying this heavy plane at the relatively high landing and take off speeds was the major consideration in their adoption not only for bomber use but also for commercial transport planes.

Another type of strong rayon yarn is used in making fabrics for self-sealing gasoline tanks, the fabric serving as an effective support for the self-sealing soft rubbery plastic. Another type of strong yarn is used in making the "Tackle Twill" with the strong rayon in the warp and a cotton filling. This fabric had given such excellent service in football fields during the past few seasons that it was adopted by the army as standard equipment for its parachute troop uniforms because of its strength, smoothness, resistance to snagging and the wear punishment it can take.

Larger and larger quantities of these strong rayons are being demanded for war equipment of one kind or another and only a short time ago the War Production Board notified the rayon industry that the output of high tenacity yarns will have to be stepped up to meet these increasing military needs.

Rayon Staple Fiber

Rayon staple fiber is also playing its part. Fabrics of spun rayon and wool blends have been made which the army has been studying and testing quite exhaustively for blouses, trousers, and overcoat material as well as for shirtings and underwear. It is not expected, however, that such blends will be adopted immediately for general use in the various services, at least not until or unless an actual shortage in wool develops. However, due to the excellent showing of such blends they will no doubt become important for uniforms for civilian defense work, not only because of their warmth and durability but also because of their relatively low cost as well.

Hitherto cartridge cloth has been made of silk but extensive experiments have been conducted with a view to using strong rayon staple so as to conserve the silk for parachute and other vital purposes. Tenting and camouflage fabrics of rayon are being developed.

Civilian Uses

So much then for a brief account of the expanding uses of rayon for apparel and equipment in the various defense agencies of the government. There are still the civilian uses which are important. War has curtailed supplies of many of the natural fibers or, as in the case of silk, has eliminated them altogether for civilian use. Had it not been for our highly developed and extensive rayon industry, very serious shortages of needed civilian and military apparel might have developed.

Take the case of silk. Our imports of raw silk were about 50 to 60 million pounds per year. Of this fully 90% went into hosiery leaving only some 4 to 5 million pounds for dress and lingerie fabrics and other purposes. Therefore, years before the present emergency, the rayon industry was producing fine yarns and of such a quality that rayon had gradually taken over the fine goods market but with prices kept within the reach of all. Yet it never was the idea of the rayon industry to palm off rayon as silk. In fact, quite on the contrary it waged an incessant and strenuous educational campaign to have rayon sell on its own merits and the labeling programs of the various producers bear witness to that fact. These programs have done much to inform the consumer that he or she was buying rayon made in this country instead of imported silk.

Such informative labeling is not only approved but is being encouraged by the various government agencies since it promotes intelligent buying and also furnishes information about the proper handling of the materials to make them last longer. Improper use is wasteful and hinders production

(Continued on page 60)

A NEW SOURCE of SYNTHETIC RUBBER

Approximately 100 Florida Everglades farmers, neighbors of the U. S. Sugar Corp., were advised of the company's rubber proposal at a dinner preceding the public announcement. Shown here at the speaker's table are: (left to right) Clarence R. Bitting, president of U. S. Sugar Corp.; J. W. Moran, executive vice president of the sugar concern; Dr. B. F. Ashe, president of the University of Miami; and Dr. B. A. Bourne, vice president and director of research for the sugar company.

RECENTLY announced plans for producing synthetic rubber from large plantings of sugar cane, sweet potatoes and peanuts in the Florida Everglades, will stir the imagination of all who recall how the necessities of World War I mothered inventions that developed a new and robust chemical industry in coal tar products.

The new, and engrossing, proposal, sparked by current war-time needs, is that essentials for scores of vital materials necessary to speedy and successful prosecution of the war, be supplied by the carbohydrates of the plant life which grows so abundantly in the fertile, Nile-like plains of the Everglades.

Down in Florida, men of vision and money, men who pore over test tubes, and hundreds of dirt farmers who know how to coax fabulous yields from the black muck of the Everglades, are doing more than wishful thinking. They are actively at work to create a new agro-industrial economy around the shores of Lake Okeechobee that will start with a $75,000,000 investment in agriculture and in processing plants, give employment to some 20,000 additional heads of families, produce an estimated $60,000,000 worth of products annually and—most important of all, contribute some 10 per cent of the nation's rubber needs.

A businesslike proposal to install a rubber production line in the Everglades has been laid before farmers of the lake region—and on the desk of the War Production Board — by Clarence R. Bitting, president of United States Sugar Corp., which now conducts in the Everglades the largest sugar house and sugar-cane producing operation in the United States. Mr. Bitting, who took over a sugar cane failure 11 years ago and transformed it into a dividend-paying business, has spent large sums in scientific research, maintaining an expertly-staffed laboratory as an important part of his sugar-producing plant at Clewiston, Fla.

Mr. Bitting's contributions to reclamation and scientific farming in the Everglades were recognized formally last winter when the University of Miami made him an honorary doctor of laws, and congratulated the New York City-Florida businessman upon his noteworthy "return" to the heritage of 300 years of Pennsylvania farmer forebears.

It is characteristic of Mr. Bitting's relationship with the independent farmers of the Lake region that, although his proposal to the WPB was completed in advance, he would not divulge the multi-million dollar development program until he had first presented it to his farmer "neighbors." This he did at a dinner to about 100 Everglades growers recently, at which time he revealed the sugar company proposed to lease sites for processing plants, sidings and other facilities for $1 and to operate, probably under a subsidiary company, the nearly one dozen proposed processing plants at cost, for the duration.

To produce some 90,000 tons of synthetic rubber annually would require the yield from 100,000 acres, and it was proposed that the independents plant half this acreage. A farmer committee was appointed on the spot and four nights later, Everglades landowners representing more than 100,000 acres, gathered at a town hall meeting on the shores of Lake Okeechobee and voted unanimously to "undertake this project as a matter of patriotism, whether we make any money or not." At the same time the independents sent resolutions to Washington officialdom asking WPB and the Florida congressional delegation to "do anything and everything necessary to insure prompt construction of needed facilities and provisions for obtaining necessary equipment, both agricultural and otherwise, to the end that we farmers of the Everglades may do our part in the successful prosecution of the national war effort."

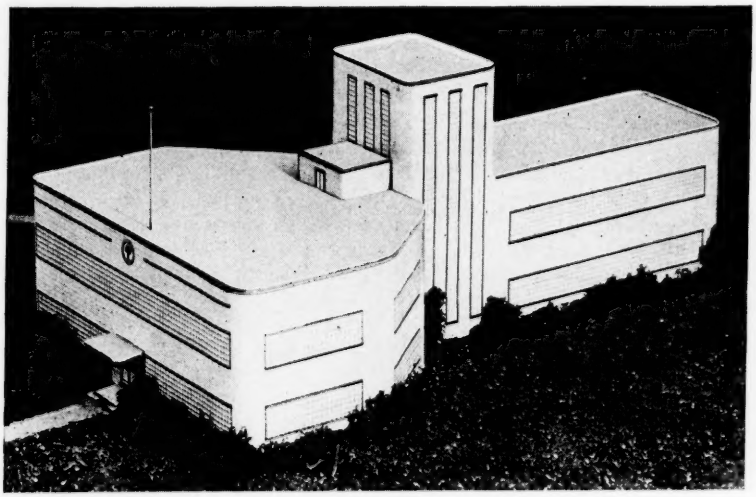
Those of the Everglades farmers who were short on their soil chemistry were long on their belief in Dr. B. A. Bourne, chief chemist of the sugar company, whose cross-breeding of sugar cane has enabled

independents, as well as the sugar company, to obtain consistent yields of four tons of sugar per acre. (The Cuban yield, under somewhat similar climatic conditions, is half that amount per acre). More recently, they had seen Dr. Bourne harvest from an experimental plot, sweet potatoes larger than a man's head and running 600 bushels to the acre. If Bourne said synthetic rubber, or what he preferred to lump under the term "lastics," could be miraculously created from cane juice, the starch of sweet potatoes and the oil of peanuts, they were willing to grow the crops and let Mr. Bitting and Dr. Bourne worry about what happened from then on.

Actually, the manufacture of commercial lastics from the carbohydrates and proteins of plant life is no longer experimental. U. S. Department of Agriculture researchers have been well "up" on the process for some years now. Here are some of the items that have been listed as vital war materials, the basic raw materials for which would be processed from sugar cane, sweet potatoes and peanuts:

Oil-resistant types of synthetic rubber; plasticizers and lubricants in the milling, mastication and compounding of other types of synthetic rubber; protective coatings for mechanized equipment, airplanes, etc.; white resins for airplane windows, etc.; coatings for textile fabrics for raincoats, wading suits, balloon fabrics, pontoons, lifeboats and rafts, tarpaulins, gas-mask fabrics, etc.: stabilization of the viscosity of airplane lubricating oils over a wide range of temperatures; solvents and plasticizers in cellulose and synthetic resins; replacement, in whole or in part, of many other chemicals not presently produced in sufficient quantity to meet existing war-time demand, such as those used in making alkyd and acrylic resins, various humectants, solvents and plasticizers, thermo-setting and thermo-plastic plastics, ethyleneglycol, glycerine, etc.; protective and oil-and-water repellant non-tin and non-glass containers for foodstuffs, etc.; adhesives, protein resins, synthetic wool, process materials for textile and paper manufacture, textile and paper finishing, food products, concentrated rations, etc.; special purpose lubricants, high melting point coatings for food and confections, high smoke point cooking compounds, special process soaps, etc.; as well as a long list of other products used and useful in peace as well as in war.

Right—This bottle won't shatter when dropped—it will merely bounce, for it is a lastic or synthetic rubber made from methyl acrylate, a product of the soil. This was but one of the samples exhibited to Everglades farmers. Other samples were vials of raw sugar, sweet potato starch, peanut meal and oil, lactate and methyl acrylate, all of them essential for producing forms of synthetic rubber so badly needed for prosecution of the war. Below—The new, modern and specially designed laboratory of the sugar company in Florida where much of the research is carried out.



Of the estimated $75,000,000 investment necessary to process land, install additional water control, plant, cultivate, harvest and erect processing plants, Bitting would seek war-time financing for $50,000,000, with his sugar company and the independent farmers supplying some $25,000,000 of equity capital.

The Everglades project is not wholly a war baby. Conversion from lastics to plastics would be a comparatively simple operation after the war. This, it is believed, would insure a going peace-time operation in a field which is rapidly assuming great commercial significance.

The planting of 100,000 additional acres for purposes of synthetic rubber, and possibly other vital war needs, does not contemplate any diminishment in the United States Sugar Corporation's sugar production program. The eleventh harvest, recently ended, was the longest in the history of the corporation's Everglades operation—194 days. It dumped into the nation's scant sugar bowl some 90,000 tons of raw sugar, produced from nearly 30,000 acres of sugar cane. The sugar house at Clewiston, during the current harvest, established a new high of 7,048 tons of cane ground in 24 hours and suggests to management some increase in acreage to complement new processing capacities developed under the impetus of all-out war production.

XUM

SYNTHETIC RUBBER PROBLEMS

by

R.T. Haslam
Vice President
Standard Oil Co. of N. J.

UNTIL Japan attacked Pearl Harbor, rubber was to the average man something that was used to make tires, hot water bottles, erasers for pencils, inner tubes and a lot of other utilitarian products. But it was not something about which he bothered himself much one way or the other. In a vague sort of way he knew that our rubber came from the Far East and somewhere or other he had probably heard that American scientists had been working to develop synthetic rubber.

Since the start of our war with Japan and more particularly since that country's successful invasion of the countries from which we secured about 95 per cent of our natural rubber, the average citizen has become tremendously interested in the subject. He has read about rubber, heard about it over the air and listened to conversations about it whenever groups have discussed current events. If he finds himself somewhat confused, he may be excused. But, despite the substantial spoken and printed wordage on rubber, two facts stand out in bold relief:

We know how to make synthetic rubber in this country.

We are making it now.

The logical question to follow is: How much of it can we make? Will we be able to make enough to replace the natural rubber we formerly used before present rubber stocks are depleted?

And right here we come up against a tough question. One answer is that we can only be limited in how much synthetic rubber we make by what construction materials we are willing to provide for the necessary plants.

Literally, this is a perfectly true statement. Buna-S, considered the best substitute for rubber for tires, Buna-N, or Perbunan, a synthetic rubber ideally suited for many specialty uses, and Butyl rubber, which can be used to make light duty tires and inner tubes — all these synthetic rubbers may be made from raw materials of which this country has an ample supply.

Buna-S and Buna-N are made by combining the chemical butadiene with such other chemicals as styrene and acrylonitrile. Butyl rubber is made by polymerizing the hydrocarbon gas isobutylene with small amounts of diolefins such as butadiene.

In other words, this country can produce the raw materials required to make these synthetic rubbers. The question, therefore, becomes one of plants in which to make the synthetic rubber.

So far as plants are concerned we know how to build the plants. In fact, the Standard Oil Company (N. J.), to which this country is indebted for securing the rights to make the Buna rubbers, and for developing Butyl rubber in its own research laboratories, is already making all these products. The problem today is to obtain the material to build the plants necessary for the production of both military and civilian requirements.

These are not problems which can be solved by private industry. It would be presumptuous of industry to demand materials for this purpose. Industry today is a soldier in the ranks. It takes its orders and acts for the common good of the nation at war. Under our existing war-time economy it is not for private industry to demand this or that material but for it to use its skill and ingenuity to work not in its own interest but in the interests of its country. The decisions must be made by the government of the United States.

To build a plant which can produce 6,600 long tons of Butyl rubber annually, for example, would require the following materials:

4,000	tons of carbon steel and cast iron.
93	tons of ferrous alloys.
68	tons of non-ferrous alloys.
53	tons of copper.
110	tons of lead.

That, however, is only part of the problem. These materials must be fabricated. For instance, a large part of the carbon steel needed would be in the form of steel sheets, at a time when shipbuilding is crying for steel sheets.

You don't just take these raw materials and put them down in a building and have a synthetic rubber plant. They must be manufactured into compressors, coils, fractionating chambers, pipes, valves, fittings and other finished products.

True, we can build the plants to make the synthetic rubber which we know how to make in the United States. But first, we must secure the material for building the plants. Who will decide this and when it will be decided are problematical at this time.

The investment in plants necessary for large-scale production is so large as to make it impossible for private industry to underwrite the necessary plants. Competent authorities estimate that an investment of $1,000 per long ton of annual capacity is necessary for the construction of a Buna-S rubber plant and $750.00 for a Butyl rubber plant. This must be done by the government in the interest of the people of the United States. To date the government has indicated that it will subsidize a large-scale synthetic rubber industry in this country to the following extent: 700,000 tons per year of Buna-S; 60,000 tons of butyl; and 40,000 tons of neoprene.

Our government is on record as recognizing the need for large-scale production of synthetic rubber. Our rubber, petroleum and chemical industries know how to make it. We produce the raw materials out of which it is made. Given the money and the material to construct the plants we can make all the synthetic rubber we need for civilian and military purposes.

In considering this problem it is of the utmost importance to note that right now in this country we have in operation synthetic rubber

(Continued on page 64)

RAMIE and the SOUTH

By

A. C. Whitford, Ph. D.

Research Chemist

Alfred, N. Y.

RAMIE, or China Grass as it is sometimes called, is the oldest textile fibre known. It was used by the ancient Egyptians in the wrapping of their mummies. Though by no means unknown in this country, it has proved to be, until now, a difficult matter to handle economically as well as from a technical point of view. But now with a solution of these difficulties at hand, ramie offers great possibilities at a time when this nation urgently requires textiles capable of being manufactured from this fibre. It would be of material aid in the war program, it would provide the South with a new farm crop, and it would also open new opportunities for the textile industry. In other words, ramie is a fibre which, due to its tensile strength, durability, flexibility and beauty, can ease the burdens of both agriculture and industry.

Ramie Growing

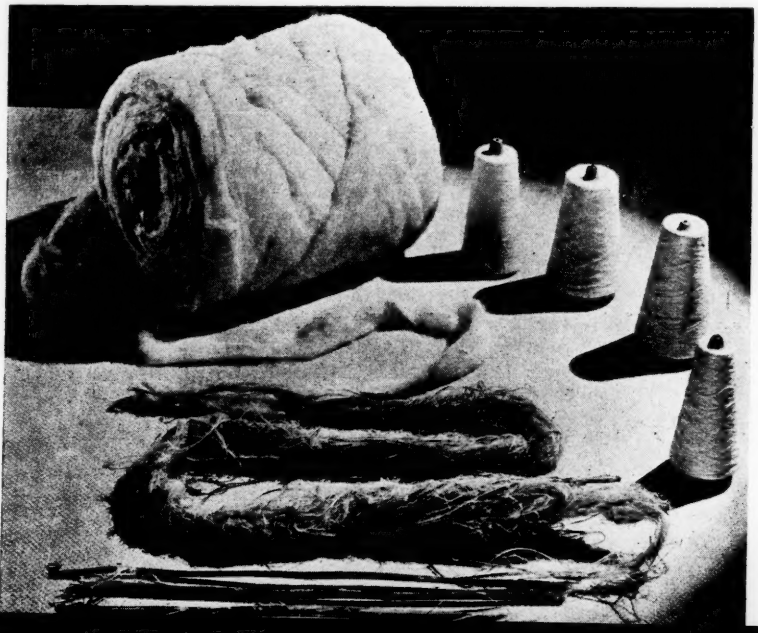
As is well known, ramie has been conspicuous for its beauty, strength and durability since the period of the Pre-Dynastic Egyptians. Much has been learned recently concerning this fibre plant. Its adaptability to different localities, soils, climates, etc., has been determined. The costs of production, decortication and processing have been ascertained and its flexibility in spinning and weaving under ordinary mill practice in the United States has been established.

Scientifically named Boehmeria Nivea and commercially known as China Grass, ramie is a hardy perennial, indigenous to the Orient and several other tropical and subtropical countries of the Pacific area. It has been experimentally grown for many years past in the southern United States by various State experiment stations. Especially during the last ten years intensive research and experiments have resulted in the solution of the major problems connected with the present endeavor to establish ramie as a cash crop for the South.

It has been determined that for the successful growing of ramie, the rainfall must not be less than 40 inches per year, or in the alternative there must be thoroughly effective irrigation. Also, the soil must be well drained and must not be allowed to become water logged and sour after heavy rains. Plenty of moisture and thorough drainage are absolutely essential to the successful growth of ramie. The plant must be raised on fertile soil containing plenty of organic matter, to assure best development. The soils which have been found best are the well drained muck lands of the South or the heavier sandy loams of the Orangeburg series.

These two types of soil produce more tonnage and better quality fibre than the thinner soils, although the latter may be heavily fertilized. It has been determined that when ramie has been properly

Above—a tan coat knitted from yarn spun on mules in a mixture of 58 per cent ramie and 42 per cent short wool. The slacks were made from 100 per cent ramie corduroy, the pile and warp yarn being made on the cotton system: the white blouse is 50 per cent ramie and 50 per cent spun rayon. All the ramie was processed according to the method described in the article. Below—The evolution of Florida grown ramie, showing the stalk before and after decortication, the corded sliver and the yarn.



planted and given normal attention, then 45 tons of green matter may be the average expected result per acre yearly, from which upwards of 1500 pounds of fibre can be recovered. If the soil is properly chosen a minimum of 3 cuttings per year, each yielding about 500 pounds of fibre, can be anticipated. It should be emphasized that ramie is a perennial which, once planted and given normal attention, will thrive year in and year out for many years. This point is most important to bear in mind because at first glance the initial cost of establishing an acre of ramie may appear high, but remembering that the plant is a perennial and that once the acreage is established it will continue to reproduce itself abundantly for years without renewal of planting, soon dispels any objection to the first cost, when compared with the end results.

Ramie flourishes best if root-cuttings are used instead of seeds. Roots are plentiful and comparatively inexpensive. The root-cuttings should be planted in rows three or four feet apart. Approximately 4000 roots per acre will give the best results in muck lands, while in sandy loam soils about 6000 roots per acre are necessary. After planting, the plants will be ready for cutting in from 90 to 120 days. This initial crop seldom produces commercial fibre, therefore it is best to leave it on the ground, to help enrich the soil. The second crop should be ready for cutting at the end of the ensuing 90 days but still only a small portion will serve as commercial fibre. The third crop, which should be ready to cut at the end of the following 90 days, will be largely commercial fibre. All cuttings thereafter should yield 100 percent commercial fibre at the rate of 1500 pounds per acre, year in and year out.

It is estimated that the total cost per acre of ramie will approximate a first cost of $81.00, distributed as follows:

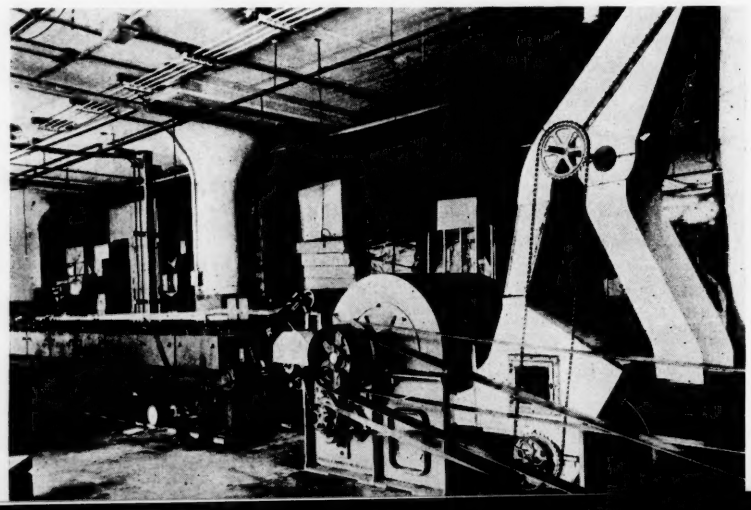
Preparing cleared land ..	$ 3.50
Roots @ 1¢ each (4000) ..	40.00
Covering roots and cultivation	7.50
Fertilizer and fertilization	20.00
Cutting, harvesting and hauling	10.00
Total cost 1 acre first year	$81.00

At the end of the first year there will have been produced about 500 pounds of merchantable fibre, and each year thereafter the same acre will yield upwards of 1500 pounds. The cost of the crop the second year will fall to $49.50, and not exceed that amount each year thereafter if efficiently handled. This latter cost may be distributed as follows:

Fertilizer and fertilization	$20.00
Cultivation	3.00
Harvesting, de-topping and hauling	26.50
Total cost second year and each succeeding year (per acre)	$49.50

Based upon the production of 1500 pounds of ramie fibre per acre per annum, the foregoing estimate brings the total agricultural expense to 3.3 cents per pound. This is considered conservative.

The machine on which Florida grown ramie was successfully decorticated.



Harvesting Ramie

When the bark of the stalk is turning brown up about six inches from the ground, the plant has reached its maximum growth and the stalks are sufficiently mature for harvesting. At the present time two methods of harvesting are used. One method is by hand, employing the machette as in cutting sugarcane: the other method is by means of a short sickle bar mower. Although the latter does a good job, in my opinion the machette is preferable until such time as a suitable mechanical harvester shall have been perfected.

De-topping and the removal of the leaves is accomplished with the same machette at the time the stalks are cut after which the latter are left on the ground until hauled to the decorticating plant which should be done within 24 hours. Meantime the tops and leaves are left on the ground for fertilizing purposes.

The next step is to put the stalks through heavy iron squeeze rolls similar to those used for sugar cane but not quite so heavy. The function of the squeeze rolls, which are part of the decorticating plant equipment or can be used by the farmer, is to rid the stalks of plant juices, pith, and most of the woody substance and lessen the danger of mildew. After squeezing, the stalks in flat-ribbon-like form are allowed to dry before the actual decorticating begins.

The latter should be completed in 24 hours and done in sheds open at both ends to insure the utmost ventilation. Artificial drying should be avoided as this is apt to "burn" the fibre and render it useless.

Decortication

Next comes decortication. This is a mechanical process, the function of which is to limber up the "squeezed" stalk-ribbons and soften them by a kneading motion which separates the fibre bundles and dislodges most of the remaining woody material and bark from the fibres, preserving as far as possible the full length of the fibre. The Manawul process of decortication involves the use of a specially designed machine that accomplishes the foregoing opera-

tions economically and efficiently without harming the fibre. Experience has shown that material decorticated by this method is better suited to the degumming process which follows after, than the hand decorticated China Grass that usually embodies about ten percent more undesirable cementitious matter. Furthermore, hand decorticated ramie is difficult to cut and handle due also to the effect of baling in "ribbon" form under heavy pressure ("ribbons" represent the usually accepted Chinese form of shipping ramie).

Estimates based upon experimental trials of this machine satisfy me that it can handle upwards of 12,000 pounds of squeezed, dry stalks of ramie every eight hours. Thus each machine can handle the cuttings from approximately 25 acres per day or practically at the rate of 500 pounds per cutting at a total cost not to exceed 1.7 cents per pound of material decorticated; or, assuming 90 days between cuttings, and plantings staggered, then each machine will handle better than 2,200 acres of ramie, or 2,000 acres to be conservative.

A decortication machine, or plant, such as outlined above should be centrally located in the growing region where it can depend upon the harvest from approximately 2000 acres, for this is the estimated capacity of the machine assuring constant eight hour per day operation. Under such circumstances, decortication is somewhat comparable to that of cotton ginning and as such, offers possibilities as an industry unto itself.

Degumming

The fibre is now ready to be degummed, a process akin to "boiling off" silk or cotton. Under the process described here, which forms part of the Manawul method, the degumming operation can be conducted with equal efficiency either in the decorticating plant, in the textile mill or in a separate plant.

The principal advantage of handling degumming along with decortication lies in the reduction in weight of the product or saving in shipping space and freight cost since degumming removes about ten percent of the weight of the decorticated fibre. The decorticated material is now immersed in a benign and non-oxidizing chemical solution which is kept at the boiling point and constantly agitated by suitable mechanical means for a period of about two hours. The chemicals thoroughly dissolve the cementitious matter without injury to the fibres which, after thorough rinsing, remain soft and flexible indefinitely, thus removing the curse of "brittleness" which hitherto has contributed materially to the difficulty of ramie's progress. The net cost of this degumming operation approximates 5.5 cents per pound of finished ramie fibre.

The simplicity of the process outlined above lies largely in the fact that it does not require "line fibre" and that the degumming process is carried on in rotary washers similar to those used by laundries in washing clothes: also, it is completed without removing the fibre from the degumming receptacle, and in a period of less than two hours to the batch. The quantity to be degummed at a time simply depends upon the size of

(Continued on page 62)

Right—In the lower picture ramie is shown growing on Florida Everglades organic soil. The top photo (by courtesy of the Bureau of Plant Industry, U. S. D. A.) shows the first crop of ramie in the background and the second crop in foreground, a growth under ideal soil conditions.

War Explosives and the South's Chemical Industry

U. S. Army Signal Corps Photo

Placing the powder charge in the gun after the projectile is already in place. Much of the powder for these charges is being made in southern plants.

WHEN a large projectile is shot or a bomb is dropped, the result is a violent explosion at the other end of the line. Trinitrotuluene (TNT for short) gets that job done.

The principal reason for the popularity of TNT is that it is very gentle and docile—until roused. It can be handled with great ease and complete safety. An open container of TNT can burn freely in the air without exploding. A rifle bullet fired through it will not set it off. But a severe jar or an explosion inside a mass of TNT is another matter. Then it goes off like nobody's business. It is so violent, in fact, that thirty dollars' worth, properly placed and properly detonated, will sink a multi-million dollar battleship. Consequently, the production of adequate quantities of TNT and other war time explosives is the prime, or one of the prime considerations.

For the past two years a great part of the energies of the chemical industry, the Army and Navy Munitions Board and the War Production Board and its predecessors, has been spent in building a war explosives industry where none existed before. And because the South provides the source of a major part of the necessary raw materials, a considerable part of this new industry has been or is being built in the South where, in normal times almost one-third of this country's chemical products originate.

Of the 350-odd chemical plants now building in this country, approximately 100 are devoted to the raw materials out of which explosives are made. This vast expansion is necessary because peacetime explosives and war explosives are entirely different. In most cases not even the same raw materials are used. The methods of manufacture are different.

In time of peace the principal explosives in common use are black powder and nitroglycerine. In war, they are smokeless powder, TNT, and—with the British, cordite. Because neither smokeless powder nor TNT is produced in quantities in peacetime, the raw materials from which they are made must, in a large measure, cut across civilian uses and cause shortages in products far removed from explosives.

War explosives fall into four main categories: "propellants," such as smokeless powder, which shoot projectiles from guns; "high explosives" inside large projectiles which explode when they hit; bombs dropped from aircraft, which need no propellant, and demolition explosives used to blow up bridges, buildings and the like.

United States Armed Forces prefer smokeless powder as a propellant. Chemically, this is a compound of cellulose and nitric acid, similar to the plastic material used for toilet articles and for rayon.

Cellulose is made from cotton linters—the fibers which adhere to seeds after cotton is ginned—and wood pulp. Cotton linters are used in the manufacture of rayon and

Approximately 100 of the 350 chemical plants now being built are for explosives' raw materials

this is one of the materials which must suffer, in so far as civilian uses are concerned, as a result of the war effort. Wood pulp also is used in rayon manufacture and to make cellophane and high grade white paper. A portion of this pulp must be diverted to powder.

Nitric acid, the other main ingredient, is one of the strongest acids known. Nitrogen, which enters into the making of nitric acid, has a wide variety of uses, the most important being the manufacture of fertilizer. Thus fertilizer is not as available as it used to be because of demands of war.

Nitric acid is composed of three elements, hydrogen and oxygen, which form water, and nitrogen, the major constituent of air. But when these three are combined in the proportions of one part hydrogen, one part nitrogen and three parts oxygen they form one of the most reactive of all chemicals.

The common method is to combine nitrogen and hydrogen to make ammonia; then oxygen and water are added to make the acid.

Another way is to extract nitric acid from Chilean nitrate with the help of sulphuric acid. Both are being used at present.

Cellulose and nitric acid combine only in the presence of sulphuric acid. They form cellulose nitrate, the basic material for smokeless powder. This must, however, be purified. If this is not done it depreciates rapidly and is much more liable to premature explosion.

That is where industrial alcohol comes in. The alcohol purifies the cellulose nitrate so it will be ready for military use. Demand for alcohol has increased more than 300 per cent as a result, and that is why its use in such things as toilet articles and perfumes has been curtailed.

TNT, referred to above, is composed of toluol, a liquid obtained from either coal or petroleum, and nitric acid. Until World War I the production of toluol was negligible. After that conflict, during which production had been greatly enlarged, peacetime uses for it were found. Principal of these is as a thinner for lacquers and other protective coatings.

Thus, while our peacetime production of toluol was reasonably large, it is being doubled and redoubled to provide enough for war. The regular source is as a by-product of the coke oven, but from this source only a part of our needs is available. Fortunately, petroleum came to the rescue, as it has in many other similar situations, such as butadiene for synthetic rubber. Aviation gasoline is a vital necessity for war and new plants for its production dot the country. Toluol is a by-product, and before the war is over our toluol production from this source will be many times that of the coke oven.

TNT could fill every war need for high explosives, if we had enough. Modern war, however, demands tremendous quantities of explosives and the warring nations are turning, as they did in 1918, to a substitute that provides the most explosive in the shortest possible time.

That substitute is ammonium nitrate. It is a chemical combination of nitric acid and ammonia. We commonly think of ammonia as a liquid, because in its household form it is combined with water, but for this purpose it is a gas.

Ammonia gas combines vigorously with nitric acid to form a white crystalline material that resembles common table salt. This is ammonium nitrate. It is not as easy to handle from some standpoints as is TNT, but it does about as much damage at the receiving end, which is the important point. Actually, it is seldom used alone. The general practice is to mix TNT and ammonium nitrate, and some military experts prefer these mixtures to either product by itself.

Modern warfare is based upon the advance of an irresistible sheet of fire, from guns and bombs, upon the enemy. This calls for a "rule of thumb" estimate of a pound of explosive every day for every man in active service in an army. In the fierce fighting such as has been going on on the Russian front, this

(*Continued on page 62*)

Explosives, powder and chemicals must be available in sufficient quantities for the successful prosecution of war. From top to bottom at right are shown four weapons of war whose demands put a constant strain on chemical production—shells, torpedoes, bombs and mines. **(U. S. and British official photos from OEM.)**

ARMY LIFE AINT SO BAD

"Frank"

This authentic letter from one of our former boys who is now with the United States Army, gives a clear indication as to how army life is regarded. It is interesting and will recall to many the enjoyable "Dere Mable" by Edward Streeter published during the last war. We hope it will give you as much pleasure as it has given us. Ed.

468th Eng. Shop
April 21, 1942.

Hi fellows:

I'll start by saying McCord sent me a letter and said I should write to the shop sometime, so I'll tell you that I've been busy keeping trucks rolling so that the soldiers can go from camp to camp, then across sea cause they come to this camp one day and leave for duty across sea. We were going to Pasadena, Calif., two weeks ago but they have so much work here that we are going to stay here for maybe 6 months or more and when we leave we are coming back east to Belvoid, Va., to show other fellows the work we do now. My job is mostly painting trucks so the Japs can't tell they are our trucks.

Well know body would know me back home cause I weigh 155 and when I came into the Army I weighed in at 126½ so just call me the little barrel thats what I look like.

Gee I have a lot of fun driving trucks around the camp and every week we go on a convoy of 250 miles one way and I drive a 2½ ton truck all the way. Last week we went on a trip and lunch time we stopped in a park which had caves in it and hiked 5 miles threw the caves which were very pretty, but before we got back it rained and we got wet but that's nothing new cause if it doesn't rain two hours every day something is wrong.

I've been getting a lot of guard duty out here and its 48 hours at a time, so all you people don't have to worry about the Japs getting into this land of the free.

I'll tell you that we have good entertainment out here, have a band every week and Bing Crosby comes out about every two weeks and the fellows keep saying that its too many girls in this camp—its about twice as many girls as soldiers on Sunday in this camp. Its the first time I ever seen girls tagging at a dance. I had to pinch myself to see if I was awake the first time I seen it.

Well fellows we have movies that are up to date and not like the ones we had at Leonardwood, Mo. Last night I seen "Kings Row" which I didn't like very much.

While I think of it a Jap kid about 12 yrs. old was fighting with another kid and the Jap kid said he was going home and get a machine gun and the other kid told his father who happened to be a F.B.I. man and when he went to the Japs home he found 4 machine guns in the cellar, so I'll be glad when they put them in a camp to themselves cause if I seen one while I was on guard duty I would shoot and ask the questions afterwards.

I'm telling you we have eats here fit for a king and all you can eat. In the morning you say 4 eggs well done and the fellow gives them to you that way with plenty of milk to drink; that's what I like about this company, lots to eat; as long as they give me three meals like I get a day I don't mind staying in the Army till the wars over, cause I know that people back home haven't food like we have every day.

We got new ties; they don't look so hot but what have I go to lose? They gave them to me so I'll wear them even if I don't like it.

As for sports I play a lot of them thats why I don't get much chance to write letters. Right now I'm trying hard to be picked for the All star baseball team that will play the big league all stars in Cleveland, Ohio, and I have a good chance of playing short stop if I don't get hurt like I did last week. Was on the bench with a bad leg for 5 days, but so far I'm batting 425 and got 23 home runs—best in the camp league by 14. Tell Wann this; tell him I also got the medal for the high score in basketball and hold the lead in ping pong with only two more fellows to play yet. Gee this must be my lucky year for sports.

Well I read Hen's letter and wish I could write a letter that good, but I just can't think of anything to say when I set down to write a letter.

Well I'm going to close by hoping all are well and happy and all stay that way, with lots of luck in anything you do.

O yes, I almost forgot to ask you if you still print Black and Decker; if so send me a few books cause thats the machines I work with and would like to read up on them.

Your Ex Stooge
FRANK

P.S.: Don't mind the writing cause this dam pen is know good.

P.S.: WRITE SOON AND LET ME KNOW HOW THINGS ARE THERE.

P.S.: Tell Mr. McCord I said hello and thanks for writing me and I'll try to write him a letter one of these days if I can think of something to say.

War Contracts and Allocations to Southern States Increase $1,066,398,000 During March

War contracts and allocations distributed by government agencies to the southern states for the period June 1, 1940 through March, 1942, totaled approximately $10,453,977,000 compared with $9,387,579,000 at the end of February, 1942. This represents a gain of $1,066,398,000 or almost 11.5 percent during March. Totals by state and by government agency for the entire period are shown in the accompanying table.

Major War Supply and Facility Contracts and Allocations, June, 1940, Through March, 1942

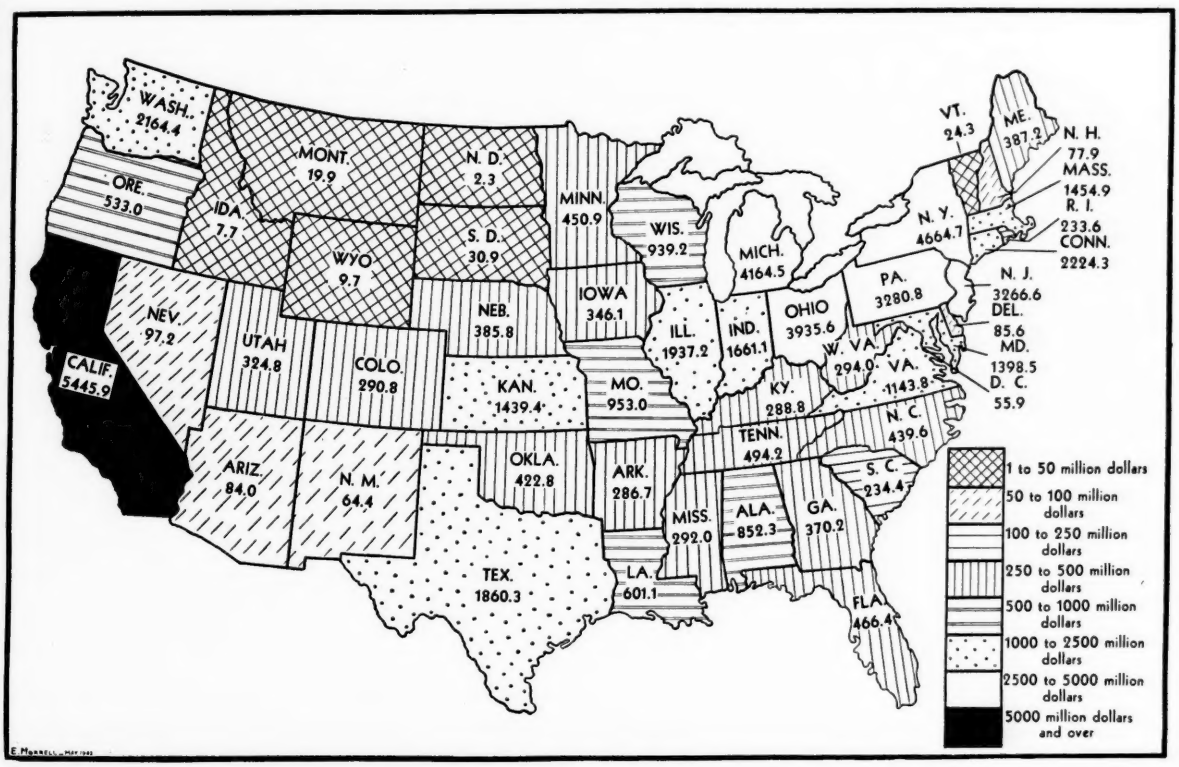
(Thousands of dollars)

State	Army, Navy and Maritime Commission Supply Contracts: Aircraft	Ships	Miscell	Facilities: Industrial	Non-Industrial	Dept. of Commerce C.A.A.	National Housing Agency	Federal Works Agency	Federal Security Agency	Federal Loan Agency R.F.C.	Total
Alabama	.....	241,334	138,993	331,823	107,963	967	11,843	8,693	4,894	5,790	852,332
Arkansas	.....	.....	43,456	178,446	57,794	....	1,414	1,897	3,160	448	286,681
Dis. of Col.	.....	237	1,835	13,985	26,019	....	2,982	9,713	1,035	110	55,916
Florida	.....	156,178	17,056	21,718	225,621	4,599	7,841	21,928	4,458	6,964	466,363
Georgia	.....	26,243	76,529	36,338	209,090	2,271	7,133	7,067	4,968	544	370,183
Kentucky	.....	.....	22,946	80,181	130,232	323	2,873	7,741	4,208	40,246	288,750
Louisiana	68,496	114,225	44,624	220,679	131,031	1,956	4,478	9,246	3,839	2,500	601,126
Maryland	577,502	320,380	211,619	183,247	70,573	....	16,878	7,729	3,044	430	1,398,509
Mississippi	.....	115,733	19,645	59,277	80,025	1,430	1,154	6,993	4,092	3,477	291,960
Missouri	86,734	905	355,311	369,420	108,391	....	3,688	23,124	4,758	716	953,047
North Carolina	.....	131,992	63,902	13,557	208,027	421	8,060	8,724	4,652	145	439,606
Oklahoma	160,710	.....	33,181	131,770	85,536	768	1,332	5,183	4,157	210	422,847
South Carolina	.....	10,800	63,859	36,621	90,805	1,921	7,275	20,107	2,862	162	234,412
Tennessee	35,896	10,178	116,328	162,704	156,409	253	2,526	4,744	4,851	168	494,172
Texas	289,071	257,172	158,204	606,322	497,533	4,046	13,151	22,294	10,709	1,687	1,860,305
Virginia	.....	487,819	56,222	223,325	317,675	112	44,989	7,415	4,317	7	1,143,755
West Virginia	.....	18,920	57,682	193,393	1,524	...	1,364	16,724	4,351	55	294,013
South	1,218,409	1,892,116	1,481,392	2,862,806	2,504,248	19,067	138,981	189,322	74,355	63,659	10,453,977*
United States	14,112,787	7,099,955	15,355,164	10,676,934	6,563,471	44,199	394,470	553,560	236,217	784,482	55,841,351*

*Includes $20,112,000 for the United States under the Farm Security Administration of the U. S. Dept. of Agriculture for defense housing; of this, $9,622,000 was for the South—Ala., $32,000; Ark., $66,000; Md., $7,107,000; Miss., $134,000; N. C., $126,000; Tenn., $115,000; Tex., $116,000, and Va., $1,874,000.

"Aircraft" includes contracts for airframes; airplane engines, propellers, and other parts; and certain related equipment such as parachutes and aircraft pontoons, armament, instruments, and communication equipment are excluded. "Ships" includes contracts for the construction of new vessels of all kinds; the purchase of used ships; and ship conversion, recommissioning, and repair. Propulsion machinery (when separately contracted for), armor, armament, navigation and radio equipment, parts, and materials are excluded.

War contracts and allocations of all Federal agencies through March was $55,841,351,000,000. ***Of this,*** $10,453,977,000,000 ***has gone to southern states. Totals for each state in millions of dollars are shown in the map below.***



SOUTH'S CONSTRUCTION AWARDS SET NEW RECORD

By

Samuel A. Lauver

News Editor

SOUTHERN construction continued high during April.

Fears that the industry would be seriously affected by the recent War Production Board order were temporarily dispelled with the letting of numerous large contracts by the War Department, thus swelling the total of newly announced awards to $496,651,000 for April and to $1,427,710,000 for the first four months of this year.

Prior monthly records and four-month high totals gave way to new top records as Southern construction awards skyrocketed to new heights, mainly because of tremendous increases in Government-sponsored industrial, military and other projects.

The April figure is sixty-two million dollars ahead of the former all-time monthly peak reached last August, is twice as large as the total for the month of April last year, and 25 per cent ahead of the total for the preceding month this year.

Accumulated contracts for the first four months of this year are also more than twice the highest previously recorded figure for a similar period. At this time last year, the total stood at $661,129,000 and 1941 was the banner construction year, surpassing all other calendar twelve-month periods on record.

A break-down of the statistics of the April total of $496,651,000 shows industrial awards, many being those projects costing $5,000,000 and more as announced by Government sources, at the head of the list. Public building, including in addition to military and similar type work, numerous housing projects and new schools being built in war industry areas, occupied second place with a total of $143,014,000.

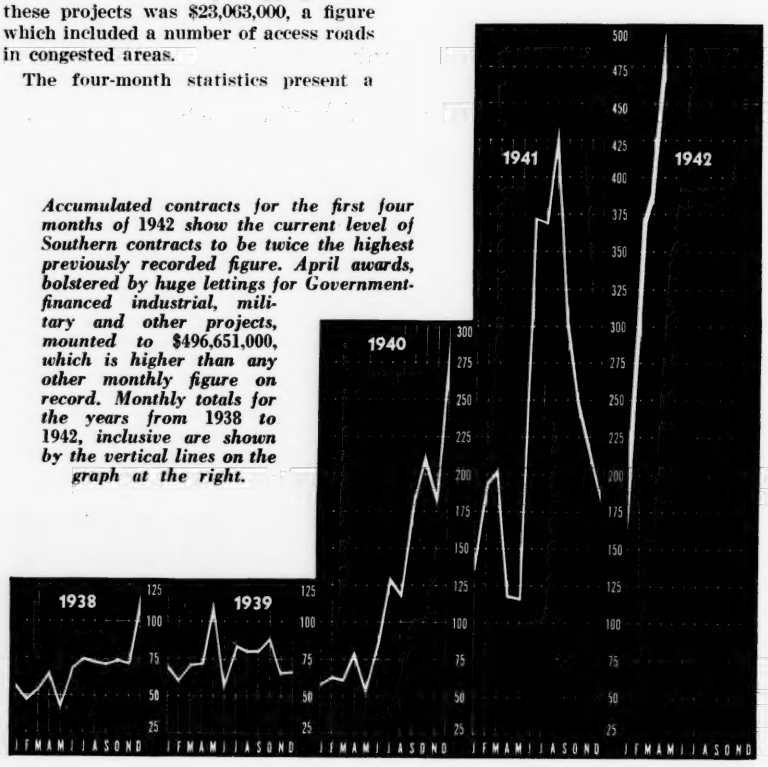
Engineering work dropped slightly. The April total was $32,512,000; the total for the preceding month, $33,939,000. Highway and bridge awards, which have been gathering strength since February, were almost twenty-five per cent above the level for March. The April aggregate for these projects was $23,063,000, a figure which included a number of access roads in congested areas.

The four-month statistics present a somewhat different picture. Public building stood in the first position with a total of $729,514,000, industrial awards following with an accumulation of $431,921,000 during the four months. Engineering awards occupied the third position. The total for these was $144,510,000. Private building and highway projects ended the list with totals of $64,612,000 and $57,153,000, respectively.

Southern construction at the end of the first four months of last year was a then unrivaled record with a total of $661,129,000, less than one-half of the figure for the current four months. Composition of Southern construction a year ago resembled that of this year except in volume. Industrial awards, however, topped the four-month total with $349,971,000. Huge expenditures of Federal money were included in this figure. Public building with its total of $185,488,000, was second. Private building was third in importance, the total being $49,953,000. Highway work, total $36,880,000, and public engineering, total $38,837,000, occupied the low positions.

high April total boosts four-month figure above past peaks

Federal contracts numerous



Accumulated contracts for the first four months of 1942 show the current level of Southern contracts to be twice the highest previously recorded figure. April awards, bolstered by huge lettings for Government-financed industrial, military and other projects, mounted to $496,651,000, which is higher than any other monthly figure on record. Monthly totals for the years from 1938 to 1942, inclusive are shown by the vertical lines on the graph at the right.

Industrial

(Including Private Utilities)

	April, 1942 Contracts Awarded	April, 1942 Contracts to be Awarded	Contracts Awarded First Four Months 1942
Alabama	$1,071,000	$3,535,000	$9,995,000
Arkansas	.....	5,025,000	1,535,000
Dist. of Col.	.....	.....	1,375,000
Florida	991,000	1,275,000	6,444,000
Georgia	15,626,000	.....	23,062,000
Kentucky	20,846,000	150,000	27,419,000
Louisiana	52,261,000	2,895,000	77,724,000
Maryland	22,717,000	545,000	37,149,000
Mississippi	36,146,000	8,035,000	37,011,000
Missouri	3,061,000	375,000	4,413,000
N. Carolina	466,000	375,000	2,023,000
Oklahoma	35,000	554,000	20,421,000
S. Carolina	.....	926,000	3,663,000
Tennessee	4,662,000	.....	6,541,000
Texas	121,405,000	46,293,000	153,039,000
Virginia	3,378,000	502,000	5,455,000
W. Virginia	.....	1,010,000	14,652,000
TOTAL	$282,665,000	$71,495,000	$431,921,000

Public Building

(City, County, Federal; Housing; Schools)

	April, 1942 Contracts Awarded	April, 1942 Contracts to be Awarded	Contracts Awarded First Four Months 1942
Alabama	$11,203,000	$10,599,000	$42,940,000
Arkansas	1,592,000	13,711,000	14,048,000
Dist. of Col.	3,357,000	1,165,000	16,916,000
Florida	6,795,000	10,114,000	33,879,000
Georgia	2,928,000	9,016,000	25,088,000
Kentucky	3,524,000	962,000	38,972,000
Louisiana	4,421,000	28,192,000	25,851,000
Maryland	6,071,000	6,543,000	35,613,000
Mississippi	26,160,000	6,475,000	36,114,000
Missouri	1,253,000	1,205,000	11,178,000
N. Carolina	2,240,000	12,166,000	49,512,000
Oklahoma	525,000	8,478,000	77,150,000
S. Carolina	4,631,000	2,230,000	14,977,000
Tennessee	10,290,000	2,254,000	54,890,000
Texas	45,647,000	60,214,000	116,658,000
Virginia	12,096,000	6,707,000	134,541,000
W. Virginia	281,000	35,000	1,187,000
TOTAL	$143,014,000	$180,066,000	$729,514,000

Public Engineering

(Dams, Drainage, Sewers, Waterworks, etc.)

	April, 1942 Contracts Awarded	April, 1942 Contracts to be Awarded	Contracts Awarded First Four Months 1942
Alabama	.....	$854,000	$546,000
Arkansas	$5,078,000	965,000	5,981,000
Dist. of Col.	23,000	100,000	397,000
Florida	3,323,000	245,000	6,158,000
Georgia	1,753,000	2,450,000	4,852,000
Kentucky	171,000	8,579,000	1,333,000
Louisiana	6,884,000	975,000	11,071,000
Maryland	174,000	1,680,000	4,031,000
Mississippi	2,306,000	266,000	3,622,000
Missouri	270,000	11,478,000	5,134,000
N. Carolina	591,000	1,922,000	3,627,000
Oklahoma	555,000	2,380,000	3,894,000
S. Carolina	1,376,000	326,000	4,162,000
Tennessee	257,000	5,565,000	48,819,000
Texas	6,552,000	12,596,000	22,268,000
Virginia	3,199,000	104,000	8,220,000
W. Virginia	.....	.....	10,395,000
TOTAL	$32,512,000	$50,485,000	$144,510,000

Private Building

(Assembly, Commercial, Residential, Office)

	April, 1942 Contracts Awarded	April, 1942 Contracts to be Awarded	Contracts Awarded First Four Months 1942
Alabama	$105,000	.....	$226,000
Arkansas	135,000	.....	1,580,000
Dist. of Col.	2,153,000	$93,000	2,775,000
Florida	412,000	70,000	4,450,000
Georgia	1,185,000	45,000	4,619,000
Kentucky	60,000	35,000	60,000
Louisiana	908,000	8,741,000	1,319,000
Maryland	2,625,000	2,300,000	14,451,000
Mississippi	188,000	164,000	1,500,000
Missouri	937,000	270,000	1,727,000
N. Carolina	256,000	35,000	1,245,000
Oklahoma	.....	45,000	1,170,000
S. Carolina	239,000	80,000	3,844,000
Tennessee	35,000	20,000	1,089,000
Texas	5,226,000	1,378,000	15,326,000
Virginia	933,000	207,000	9,011,000
W. Virginia	.....	70,000	220,000
TOTAL	$15,397,000	$13,553,000	$64,612,000

South's Construction by Types

	April, 1942 Contracts Awarded	April, 1942 Contracts to be Awarded	Contracts Awarded First Four Months 1942	Contracts Awarded First Four Months 1941
PRIVATE BUILDING				
Assembly (Churches, Theatres, Auditoriums, Fraternal)	$1,213,000	$899,000	$3,142,000	$6,742,000
Commercial (Stores, Restaurants, Filling Stations, Garages)	630,000	230,000	3,241,000	8,554,000
Residential (Apartments, Hotels, Dwellings)	13,179,000	12,339,000	57,282,000	32,672,000
Office	375,000	85,000	947,000	1,985,000
	$15,397,000	$13,553,000	$61,612,000	$49,953,000
INDUSTRIAL	$282,665,000	$71,495,000	$431,921,000	$349,971,000
PUBLIC BUILDING				
City, County, State, Federal	$119,772,000	$119,152,000	$614,283,000	$122,410,000
Housing	20,251,000	48,726,000	100,451,000	53,949,000
Schools	2,991,000	11,881,000	14,780,000	9,129,000
	$143,014,000	$180,066,000	$729,514,000	$185,488,000
ENGINEERING				
Dams, Drainage, Earthwork, Airports	$20,992,000	$24,100,000	$104,873,000	$21,547,000
Federal, County, Municipal Electric	1,268,000	10,576,000	9,955,000	10,846,000
Sewers and Waterworks	10,252,000	15,809,000	29,682,000	6,444,000
	$32,512,000	$50,485,000	$144,510,000	$38,837,000
ROADS, STREETS AND BRIDGES	$23,063,000	$12,671,000	$57,153,000	$36,880,000
TOTAL	$496,651,000	$328,270,000	$1,427,710,000	$661,129,000

South's Construction by States

	April, 1941 Contracts Awarded	April, 1941 Contracts to be Awarded	Contracts Awarded First Four Months 1942	Contracts Awarded First Four Months 1941
Alabama	$14,034,000	$15,733,000	$58,689,000	$108,658,000
Arkansas	6,805,000	20,926,000	23,364,000	12,700,000
Dist. of Col.	6,469,000	1,458,000	26,058,000	23,581,000
Florida	13,892,000	12,289,000	54,828,000	27,979,000
Georgia	24,884,000	12,136,000	61,944,000	40,324,000
Kentucky	24,680,000	9,991,000	68,563,000	37,152,000
Louisiana	64,557,000	41,188,000	117,587,000	35,848,000
Maryland	34,375,000	12,951,000	97,93,000	48,267,000
Mississippi	64,800,000	14,975,000	78,255,000	10,079,000
Missouri	5,529,000	13,413,000	22,460,000	36,278,000
N. Carolina	5,051,000	15,313,000	58,874,000	44,530,000
Oklahoma	1,218,000	13,721,000	102,935,000	14,438,000
S. Carolina	8,034,000	3,982,000	31,853,000	20,820,000
Tennessee	15,244,000	8,003,000	112,077,000	13,135,000
Texas	182,077,000	122,536,000	317,908,000	101,603,000
Virginia	22,941,000	8,315,000	165,142,000	22,085,000
W. Virginia	2,061,000	1,340,000	29,180,000	33,652,000
TOTAL	$496,651,000	$328,270,000	$1,427,710,000	$661,129,000

War Cost U. S. $131,600,000 Daily in April

The average daily rate of expenditure for war purposes in April increased to $131,600,000, as compared with $114,900,000 in March according to Donald M. Nelson, Chairman of the War Production Board. Total expenditures for the month, including Treasury checks and Reconstruction Finance Corporation disbursals, were $3,421,000,000 against $2,987,000,000 in March.

"April daily rate expenditures were more than four times those of a year earlier and nearly double those of November 1941, the month before the attack on Pearl Harbor," Mr. Nelson said.

"Expenditures reflect the growth of the armed forces, as well as increased production. Rising prices affect increased expenditures, but are to some degree offset by increased efficiency in production, which means lower unit costs.

"Hence, the rapidly rising expenditures may be considered as a rough measure of our vast war effort.

"Americans can draw much satisfaction from this picture, which means that a mighty mobilization of materials, machines and manpower is proceeding at a rapid pace. Now we must strive to increase the daily rate of expenditures very greatly."

New Texas Steel Plant Starts Production

The Sheffield Steel Corporation of Texas opened the first units of its new Houston, Tex., plant late in April, the beginning of an expansion that will involve the expenditure of $39,670,855.

The management chose to open the first units without fanfare, since the mills—originally designed for the peacetime servicing of Gulf Coast steel needs—must put their production quickly into meeting war demands.

Three open hearth furnaces with a combined daily capacity of 600 tons of steel were among the first units.

Additions already under construction include blast furnace, coke ovens, blooming mill, soaking pits, plate mills and other steel facilities, and will more than double the capacity of the present furnaces and mills.

Sheffield continued to pioneer in developing its plans for a Gulf Coast plant, just as it pioneered in production of steel at Kansas City, St. Louis and Tulsa, where its plants are working at capacity.

XUM

NEW PRIORITIES

PUT IN EFFECT DURING APRIL

Agave Fiber—M-84 Amend. #3 prohibits use of Java Sisal for certain purposes and changes inventory restrictions. M-84 Amend. #4 allows Java Sisal in process before April 21, 1942 to be made into wrapping or binder twine. M-84 Amend. #5 permits manufacturers during the 11 months ending June 30 to produce an amount of binder twine which when added to stocks on hand on Nov. 1, 1941, does not exceed 120% of sales during year ended Oct. 31, 1942.

Agricultural Bags—M-107 Amend. #1 adds a few commodities for which these bags may be used.

Amusement Machines—L-21-a Int. #1 clarifies provisions for cutting and stamping copper; also affects sales, transfer, delivery and inventory form filing.

Benzene—M-137 stops use in motor fuel except any producer or distributor may use within next 30 days 1/6 amount used for three months ending March 31.

Bicycles—L-52-a restrict sale and delivery of new adult cycles. L-52-a Amend. #1 includes all cycles with frames of more than 17 inches.

Burlap and Burlap Products—M-47 Amend. #4 eases restrictions on receipts by bag users and removes restrictions on imports.

Canned Foods—M-86-a Amend. #1 requires canners to provide themselves with materials necessary to pack canned goods for armed forces adequately in export boxes.

Chemicals—L-11 Amend. #1 changes basis of chlorine limitation to amount used per ton of rag stock treated for pulp, paper and paperboard.

Closure Enamel—M-116 limits use of enamel coatings for glass container tops. M-116 Amend. #1 postponed effective date until April 30.

Coal Stokers—L-75 prohibits manufacture for residential use after May 31 and limits production for other use to orders rated A-10 or higher.

Coffee—M-135 restricts deliveries to 75% of amount used during corresponding month of 1941.

Communications—L-50 as amended April 23, 1942 restricts new telephone installations. P-129 provides A-3 rating for maintenance, repair and operating supplies to radio and wire communication operators but not for plant expansion. P-130 provides A-3 rating to operators for deliveries of materials under $50 to be used in normal construction.

Compressors—L-100 provides complete allocation and prohibits placing or accepting orders unless specifically authorized. Use forms PD-415, 416 and 420.

Construction—L-41 prohibits start of unauthorized projects using material and equipment needed in war effort. Also places all construction under rigid control. Forms PD-200, 200A are required.

Cooking Appliances (Domestic)—L-23-a extends L-23 for a 15-day period beyond May 1, and permits use of iron in amounts equal to ¼ of quotas assigned for a 3-month period in original order.

Copper—M-9-c-2 grants jewelry industry till May 15 to use up its copper in inventory which has been plated or alloyed with gold or silver. Amendment to M-9-c (as amended 12-10-41) freezes all stocks of copper screening.

Corsets, Combinations and Brassieres—L-90 reduces by 50% the amount of elastic fabric that may be used in manufacture and prohibits use of rubber yarn and elastic thread frozen under M-124. L-90-a provides quotas.

Cotton—M-134 restricts use of cotton textile fabrics for use as industrial cloth or tape.

Cotton Duck—M-91 Amend. #1 releases from all restrictions all cotton duck made in rug and carpet mills and on looms previously making drapery or upholstery.

Cranes and Hoisting Equipment—P-5-b Exten. #2 extends original order till July 1, 1942.

Dairy Products—P-118 provides ratings of A-2 and A-3 for materials needed for repair, maintenance and operation of plants and equipment: use forms PD-413 and 414. P-118 Amend. #1 restricts applications for ratings to materials needed before June 30.

Distilled Spirits—M-69 Amend. #1 places beverage alcohol from 100 to 189 proof under complete allocation control.

Electrical Appliances—L-65 Amend. #1 further restricts both production and metals to be used in production.

Electric Generating Equipment and Steam Boilers (Used)—L-102 prohibits sale, lease or option without authorization.

Electric Heating Pads—L-84 prohibits use of chromium and curtails use of rubber, nickel and electrical resistance material in manufacturing. L-84 Amend. #1 permits makers to use up inventories not suited for other purposes and prohibits production on June 30.

Farm Machinery and Equipment—L-26 Amend. #2 prohibits all sales and exports in excess of quantities permitted to be manufactured. L-26-a Amend. #1 prohibits production requiring rubber tires after April 30 except for combination harvester-thrashers on which production must cease on July 31. P-95 Amend. #2 grants A-1-a rating to makers of certain types of farm machinery and equipment. Use form PD-81.

Feminine Apparel—L-85 stabilizes present length of skirts, sleeves, etc. for duration of war. L-85 Amend. #1 lifts restrictions on sale of ensembles in process of manufacture before April 9.

Fire Fighting Apparatus—L-30 Amend. #1 prohibits transfer, sale or use of all 2½ in. brass fire hose couplings except when so authorized; also prohibits use of copper in extinguishers. L-43 Amend. #1 prohibits use of rubber tires on auxiliary trailers made or delivered after date of issuance. P-45 (as revised) Ext. #1 extends order till June 30. P-108 Ext. #1 extends order till June 30.

Fishing Tackle—L-92 prohibits use of metals, plastics and cork in non-commercial products after May 31 with exception of fish hooks which may be made after June 1 at 50% of 1941 production.

Fluorescent Lighting Fixtures—L-78 prohibits production immediately except for essential uses. L-78 Amend. #1 eases restrictions on small fixtures and sets closing date on manufacture of other types.

Furnaces—L-22 reduces amount of iron and steel used in making warm-air furnaces.

Furniture (Metal Office)—L-13-a prohibits manufacture of virtually all types. L-13-a Amend. #1 lifts restrictions on metal shelving and lockers for armed forces and requires delivery before July 15.

General Imports Order—M-63 Amend. #4 keeps private purchasers out of foreign markets for critical materials. Use form PD-222-c.

Goatskins, Kidskins and Cabretta Skins (Raw)—M-114 Amend. #1 limits tanners during May to 70% of monthly average processed during 1941.

Golf Clubs—L-93 prohibits use of iron, steel, other critical metals, plastics and cork in manufacture after May 31; also limits production permitted till May 31. L-93 Amend. #1 permits makers to acquire finished parts from inventories of other makers.

Honey—M-118 Amend. #1 clarifies quota provisions for small industrial users.

Industrial Machinery—L-83 assumes control over manufacture and distribution of many types: use forms PD-1, 1a, 3, 3a, 200 and 200a. L-83 Amend. #1 removes restrictions till May 15.

Jute—M-70 Amend. #1 defines "import" and prohibits immediateely the sale or use of imports.

Kitchen, Household and Miscellaneous Articles—L-30 Amend. #1 brings curtain rods, fixtures and drapery attachments under control of original order.

Laundry Equipment—L-91 prohibits production for civilian use after June 1 and dry cleaning equipment after July 1 except for armed forces orders.

Lead—M-38-c Amend. #1 prohibits use of lead foil for cigarette packaging on May 1. Also makes changes in list "A" and "B."

Leather (Sole)—M-80 Amend. #1 establishes control over 80% of all stocks of manufacturers type cut outer and inner shoe soles of military weight and quality. M-80 Amend. #2 sets aside entire stock and production of heavy weight sole leather for military needs.

Liquefied Petroleum Gas Equipment—L-86 prohibits new installations except for use in transportation and re-

(*Continued on page 56*)

Important New Industrial Plants and Expansions in the South During April

ALABAMA

GADSDEN—coal bin—Wilputte Coke Oven Corp., 40 Rector St., New York, awarded contract to Rust Engineering Co., Martin Bldg., Birmingham, at $100,000 for design and construction of a reinforced concrete coal bin of 1600 tons capacity at Republic Steel Corp.'s Gadsden operation; bin from which coal is fed into lorry cars for discharge into coke ovens represents an addition to present facilities at Republic.

DISTRICT OF COLUMBIA

WASHINGTON—plant—Washington Gas Light Co., 411 10th St., N. W., let contract to United Engineers & Constructors, Inc., 347 Madison Ave., New York, for 3-story brick, steel and concrete gas manufacturing plant at 13th and N Sts., S. E.; cost $106,000; A. S. Orr, Designer.

FLORIDA

PANAMA CITY — shipyard — Maritime Commission awarded final contract, a 6-way shipyard at Panama City; J. A. Jones Construction Co., Charlotte, N. C., will build 33 emergency freighters.

GEORGIA

BRUNSWICK — shipyard — Daniel Construction Co., Poinsett Hotel Bldg., Greenville, S. C., has contract for shipways, buildings and utilities for Brunswick Maritime Commission; total cost $6,500,000.

GRIFFIN — addition — Newton Coal & Lumber Co., Griffin, has contract for addition to Highland Mills; Robert & Co., Engrs., Bona Allen Bldg., Atlanta.

MOULTRIE — shipyard — W. E. Aycock plans shipyard to build seagoing wooden boats.

SAVANNAH—extension—Savannah Electric & Power Co., will construct a 13,000 volt, 3 phase power line from Riverside power station to Southeastern Shipbuilding Corp.'s property; approximately 3¾ miles long and about 1¾ miles of it will be underground; work by company's forces.

SMYRNA—office building—Tri-State Construction Co., 114 Ellis St., N. E., Atlanta, has contract for office building, part of aircraft plant to be owned by Area Engineer, 349½ Peachtree St., N. E., Atlanta; Bell Aircraft Co., Buffalo, New York, operators; Roberts & Co., 294 Spring St., N. E., Atlanta, and associates, architects and engineers.

KENTUCKY

Plant—War Department announced award of contract to Rust Engineering Co., Pittsburgh, Pa., for architect-engineer-management services in connection with a manufacturing plant in Kentucky; construction will cost in excess of $5,000,000 and will be supervised by Nashville, Tenn., District Office of Corps of Engineers.

LOUISIANA

HOUMA — shipyard — Houma Boat Co., Bret Taulbee, Mgr., started work on shipyard; 80 x 200 ft. deep; equipped with runways, carriages and launching facilities.

NEW ORLEANS—warehouse, etc.—J. G. White Engineering Corp., Hibernia Bank Bldg., let contract to Chris Larsen Co., Maritime Bldg., for warehouse, building for storing hatch covers, storage building for asbestos covering and cement; sawdust storage bin; dead men for transfer tracks; riser at entrance to boiler room; lunch room, etc. at Louisiana Shipyard, Florida Ave. and Industrial Canal.

MARYLAND

Plant—War Department announced negotiation of a letter of intent with Charles H. Tompkins Co., 907 16th St., N. W. Washington, D. C. and Mauran-Russell, Crowell and Mulligardt, 1620 Chemical Bldg., St. Louis, Mo., in preparation for an architect-engineer-management contract in connection with a manufacturing plant in Maryland; construction will cost in excess of $5,000,000 and will be supervised by Baltimore District Office of Corps of Engineers.

CUMBERLAND—plant—War Department awarded contract to Kelly-Springfield Engineering Co. of Cumberland, for installation and operation of a manufacturing plant.

BALTIMORE—plant—W. E. Bickerton Construction Co., 101 W. 22nd St., has contract for factory building, Cleveland & Chesapeake Aves. for Reid-Avery Co.

BALTIMORE—office—Brooklyn Engineering Co., Belle Grove Rd., Brooklyn, Md., has contract for office, 5700 Alanhurst Rd. for Davison Chemical Corp.; C. Theodore Bandel, Archt.

BALTIMORE — storage — Continental Roofing Co., let contract to Consolidated Engineering Co., 20 E. Franklin St. for 1-story, storage building, 1500 S. Ponca St.

BALTIMORE—boiler House — Standard Oil Co., erect addition to boiler house, 3501 Boston St.; 1-story; masonry; cost $25,000; owner builds.

BALTIMORE—gasoline processing plant—M. W. Kellogg Co., Jersey City, New Jersey, has contract for gasoline processing plant, Boston St. for Standard Oil Company of New Jersey, St. Paul Place and Franklin St.; cost $320,000.

BALTIMORE—storage building—American Brake Shoe & Foundry Co., let contract to Baltimore Contractors, 23 N. Central Ave. for pattern and storage buildings, 2001-45 Laurens St.; 1-story; masonry; cost $20,000.

MISSISSIPPI

Plant—War Dept. announced award of contract to Proctor & Gamble Defense Corp. a subsidiary of Proctor & Gamble Co., Cincinnati, Ohio, for consultant service, equipment, installation inspection, training of key personnel and operation of a manufacturing plant in Mississippi; construction to cost in excess of $5,000,000 and will be supervised by Mobile, Ala., District Office of Corps of Engineers.

MISSOURI

ST. LOUIS—addition—W. C. Harting Construction Co., 722 Chestnut St., has contract for addition to factory, Spring Ave. and Frisco Tracks, for Machinery & Welder Corp., 700 S. Spring Ave.; Hari Van Hoefen, Archt., Cotton Belt Bldg.

ST. LOUIS—plant—Woermann Construction Co., 3800 W. Pine St., has contract for $40,000 factory building, 4235 Clayton Ave. for Mines Equipment Corp., 1909 S. Kingshighway; 1-story; brick; 100 x 155 ft.; concrete foundation and floors; unit heating; Norman I. Bailey, Archt., 26 Fern Ridge.

ST. LOUIS—shipbuilding—Massman Construction Co., Mermec Bottom Rd. has contract for shipbuilding yard and plant on Mississippi River for Missouri Shipbuilding Co., H. T. Pott, Pres., foot of E. Marceau Ave.

ST. LOUIS—addition—Midwest Piping & Supply Co., 1510 S. Second St., erect $90,000 addition, adjoining present plant; 1-story; 132 x 303 ft.; concrete foundation; composition roof; steam heating plant; Fruin-Colnon Contracting Co., Merchants-Laclede Bldg., Gen. Contr.

NORTH CAROLINA

BURLINGTON—addition, etc.—H. Frank Mitchell, Jr., of Burlington, has contract for alterations and additions to manufacturing plant for Fairchild Engine & Airplane Corp., Hagerstown, Md.; Albert Kahn Associated Architects and Engineers, Inc., New Center Bldg., Detroit, Mich.

CHARLOTTE—plant—Colonial Manufacturing Co., Inc., G. C. Pauls, Pres., erecting manufacturing plant, 2130 S. Boulevard.

WEST JEFFERSON—equipment—Carolina Briar Corp., install a semi-finishing department in local pipe blocks factory, located in Tucker lumber plant; equipment ordered.

OKLAHOMA

OKLAHOMA CITY — office — Skaggs Brothers Construction Co., Key Bldg. has contract for office, 1401 N. W. Third St. for J. B. Klein Iron & Foundry Co.

TENNESSEE

Plant — Carmichael, Gilmore and Olsen Co., Cleveland, O., reported, has contract for activated carbon plant addition for National Carbon Co.; cost $3,500,000.

CHATTANOOGA—addition—Chattanooga Boiler & Tank Co., 1011 E. Main St., has permit for addition to building; John Martin Construction Co., Gen. Contr.; Selmon T. Franklin, Archt., Chattanooga Bank Bldg.

CHATTANOOGA—machine shop — Combustion Engineering Co., has permit for machine shop, W. Main St.; Mark K. Wilson, Gen. Contr., Loveman Bldg.; Selmon T. Franklin, Archt., Chattanooga Bank Bldg., cost $39,000.

TEXAS

War Department announced award of contract to Freese & Nichols, Fort Worth, and McKenzie Construction Co., San Antonio, for architect-engineer-management services including construction, in connection with a new manufacturing plant in Texas to cost in excess of $5,000,000; construction to be supervised by Denison Corps of Engineers.

Plant—War Department announced award of contract to Chemical Construction Co., 30 Rockefeller Plaza, New York, for architect-management services, procurement of production equipment, training of key personnel and operation in connection with a manufacturing plant in Texas; construction will cost in excess of $5,000,000 and will be supervised by Denison, Tex., District Office of Corps of Engineers.

Plant—War Department announced award of contract to W. E. Callahan, of Dallas, for architectural-engineering services in connection with a manufacturing plant in Texas; construction cost in excess of $3,000,000 and will be supervised by Galveston District Office of Corps of Engineers.

AUSTIN—electrical work—Fishback and Moore of Texas, and 226 E. 41st St., New York, has contract for installing all electrical work at magnesium plant, under a subcontract with Austin Co., Cleveland, Ohio, general contractor; local contract $1,000,000; Fishback and Moore also hold contract for electrical installation at North American Aviation plant at Grand Prairie, and on bomber plant at Fort Worth.

BEEVILLE—storage building—American Creameries & Cold Storage Co., Houston, has plans in progress for frozen locker storage building, capacity 300 lockers; cost $25,000; owner builds.

DAINGERFIELD—steel plant—Lone Star Steel Co., incorporated by John W. Carpenter, Dallas, W. O. Irvin of Daingerfield, and others to establish steel mill; capacity 500,000 tons finished product yearly.

HOUSTON—expansion — Galveston Todd Dry Dock, Inc., acquired option on additional 1000 ft. frontage on Galveston Channel for possible expansion.

PORT ARTHUR — Butadiene plant—Neches Butane Products Co., will probably start work about May 15 on a $40,000,000 plant for production of butadiene basic petroleum material for making synthetic rubber, on 700-acre site between Port Neches and Port Arthur; minimum capacity 50,000 tons annually; companies interested are Gulf Oil Corp., Texas Co., Atlantic Refining Co., Pure Oil Co. and Magnolia Petroleum Co.

RAYMONDVILLE — processing plant —

(*Continued on page 58*)

SUB-CONTRACTS WANTED

The facilities listed here are those of plants desirous of executing subcontracts for war material. Others were printed in the February and March Manufacturers Record and still others will be listed as they are received. If you are making equipment or supplies under government contract and possibly can use the services of any of these plants under a subcontract, write us for the name and address, or if you *need* the services of a subcontractor of any kind write us and we will help you find one.

If you want a contract—prime or sub—write us.

LIST YOUR FACILITIES WITH THE MANUFACTURERS RECORD.

K-2. Engravers and Jewelers

Gilloutine cutter, 2 H.P. motor; six engraving power presses—three 1½ H.P. motors, three 3 H.P. motors; two embossing presses—one 5-H.P. motor; three printing presses—two ¾ H.P. motors, one 1-H.P. motor; two Gorton engraving machines with ½ H.P. motors; Gorton tool grinder with ½ H.P. motor; Kinsey milling machine with ½ H.P. motor; Kinsey grinder with motor; automatic steel saw with ½ H.P. motor; South Bend engine lathe with 1 H.P. motor; Delta drill press with ½ H.P. motor; routing machine; Delta jig saw; two power emery wheels with ⅓ H.P. motors; Watson-Stillmen hydraulic press with 3 H.P. motor (200 ton capacity); 250# gravity drop hammer with 2 H.P. motor; 150# gravity drop hammer with 2 H.P. motor; Zeh & Hahneman friction press (75 tons)—with 2 H.P. motor; Zeh & Hahneman friction press (25 tons) with 2 H.P. motor; Noble & Hunt rolling mill with 2 H.P. motors; annealing furnace complete with blower, heat control and motor; two Boland metal polishing lathes with motors; three hand drills with motors; electric enameling furnace.

N-4. All-Steel Bus Manufacturers

Metalworking: two hand metal breaks, up to 12-ga; metal shear, cuts up to 12-ga; two Stanley electric shears, 18-ga; 3" angle iron cutter; 3" angle iron notcher; angle iron bender, up to 3"; pipe and angle iron bender; two Lincoln portable electric welders; Owen stationary electric welder; 12" power hack saw; 6" bench grinder; 10" emery; two 4" electric sanders, used as portable grinders; twelve ¼" to ⅝" electric drills; three electric screwdrivers or wrenches; three handpower punches—up to 12"; 4" bar iron cutter; 10" lathe.

Floor space, etc.: 22,000 sq. ft.; wood frame and metal sides—sprinkler equipped; two stories; entrance to both levels by ramp; steam heat and roof ventilators; 10 car siding.

Woodworking: 26" surfacer; 8" jointer; 6" jointer; two variety rip saws; two single-end tennet machines; two band saws; double-end cutoff saw; singlehead shaper; dado saw.

Miscellaneous: Binks gun, or complete portable painting outfit; blacksmith forge; Smith acetylene torch; two 2-ton hoists; patterns, jigs, etc. for our needs.

S-1. Machine Shop Work

22 inch swing engine lathe; 16 inch swing engine lathe; 9 inch swing engine lathe; milling machine with index head; shaper, small turret lathe; vertical piston grinder, could be converted; two drill presses; power saw; arbor press; wheel press; several electric drills and grinders; two electric welding machines, d.c. current; four acetylene torches; two acetylene cutting torches; various other hand tools and equipment.

0-3. Iron and Steel Products

Steel shop equipment: 5 ton x 44 inch traveling crane; Lennox rotary splitting shear; 200 ton horizontal hydraulic press; Lennox rotary bevel shear; 6½ inch Ryerson power punch; 24 inch Cleveland power punch; 15 inch Rock River punch; rivet heater; 7 foot 9 inch plate bending roll; bending and flanging clamp; blacksmith forge and blower; 200 amp. Lincoln portable welder; 300 amp. Lincoln portable welder; 300 amp. Hobart portable welder; Bell air hammer, 12 inch by 5 inch.

Machine shop equipment: compound tool cutter grinder; 14 inch by 3 foot American engine lathe; Barr sensitive drill press; 16 inch by 5 foot Lodge and Shipley engine lathe; No. 2 Cincinnati Universal milling machine; Allen double spindle drill press; 24 inch by 24 inch by 8 foot Gray planer; 30 inch by 30 inch by 11 foot Cleveland open side planer; portable boring bar for cylinders; Smith & Mills shaper; 2 inch Reliance bolt machine; Ryerson drill press; 9 inch by 9 inch Peerless power saw; 48 inch Dresses radial drill; 18 inch by 12 foot Bradford engine lathe; combination grinder and buffer; 24 inch by 12 foot American engine lathe; 36 inch Bullard vertical turret lathe; No. 1 Baker vertical keyseater; 8 inch by 8 inch Curtis vertical air compressor; 200 amp. Lincoln welder.

TS-3. Iron & Machine Works

Rahn-Larmon lathe, 34 inch swing, 9½ inch bed; Lodge & Shipley lathe, 20 inch swing, 6 ft. bed; Reed lathe, 20 inch swing, 6 ft. bed; South Bend lathe, 16 inch swing, 5 ft. bed; R. K. LeBland lathe, 18 inch swing, 4 ft. between centers; Cincinnati shaper, 20 inch by 20 inch; Western machine planer, 26 inch by 5 ft. stroke; Brown & Sharpe grinder, No. 2; Owen milling machine, No. 3; B. F. Barnes drill press, 28 inch; own built drill press, 7 inch; KWK Kut power hack saw, No. 14; Gardner Denver compressor, 5 inch by 6 inch; Schram compressor, 5¾ inch by 5 inch; Lincoln welder, electric driven, 200 amp.; three Lincoln welders, motor driven; 200 amp.; four sets acetylene welding and cutting equipment; sheet roller, 6 ft.; Caldwell press, hydraulic, wheel, 400 ton; hydraulic press, 100 ton; screw press, 20 ton; metalizing gun; Oster pipe die, 4 inch; three emery wheels, 12 inch, 12 inch, and 8 inch; Storm boring mill, 3¼ inch to 7¼ inch; shear, 6 inch blade; three electric drills, ¼ inch; electric drill, ½ inch; electric drill, ¾ inch; ten pipe dies, sizes 18 inch to 2 inch; South Bend lathe, 24 inch swing, 16 ft. fed; South Bend lathe, 13 inch swing, 7 ft. bed; Barnes drill press, 24 inch; Fitchburg traveling head shaper, 18 inch by 48 inch; Hendy shaper, 16 inch by 12 inch; power hack saw, 12 inch; emery stand grinder; electric bench grinder, ¼ inch; electric driven drill press, 10 inch; electric tool post grinder, ¼ H.P.; Black & Decker post grinder, ¾ H.P.; electric post drill, ½ inch; Smith life time cutting and welding torch; Prestoweld cutting and welding torch; Smith acetylene generator; Lincoln motor driven electric welder, 200-300 amp.; motor driven electric welder, 300 amp.; Whiton gear cutter and milling machine; #1 Champion power hammer; electric blower, and anvil.

IN-1. Fire-Proof Door Manufacturing

Electric spot welders: Federal 112 Jr., 15 inch throat; Federal 112 Jr.—44 inch throat; Acme Type 663—32 inch throat; Gibb—32 inch throat Electric are welders: Lincoln; fourteen Hobarts; Hobart—Gar driven portable; Oxygen-Acetylene welding equipment; Oxweld—50 cu. ft. per hour acetylene generator; fourteen torch sets; Prestolite portable unit; Power punch press: Bliss—small (bench mount); Bliss—Geared—15 inch throat; Bliss—19½ inch open back—6 inch throat; two Bliss—10½ inch open back—8 inch throat; Bliss—24¾ inch open back—6 inch throat; Bliss—geared—26 inch gang; Bliss—27½ inch gang; Bliss—3½ inch horn hole; Doty—26 inch throat; Ferracute #P.C.; three Long & Allstatter—Geared—6 inch throat; two Long & Allstatter—Geared—4 inch throat; Long & Allstatter—Geared—3 inch throat; Long & Allstatter—Geared—28 inch gang—3 inch throat; three Loshbergh Jordan—7½ inch open back—4½ inch throat; Minster—56 ton open back—43 inch by 27 inch die bed; Schatz—geared—9½ inch throat; Semco Nibbler—21 inch throat; Power punch and shear: Buffalo-Tripple punch and shear; Beatty Co.—pun—shear—capacity 1½ inch by 1 inch punch, 7 inch by 1 inch shear, 6 x 6 x ⅜ inch angle; Hendley & Whittemore—4½ inch throat—4 inch shear; Power shear: Bertch—3/16 inch by 10 ft. 0 inch—double geared; Bertch—¼ inch by 4 ft.; Bertch—16 gauge by 5 ft.; Bertch—corrugated steel by 30 inch; Cleveland—angle—12 inch throat; Stamco—18 gauge by 10 ft.; Ohl—18 gauge by 10 ft.; Power forming brake: Bertch—¼ inch by 10-6; Cincinnati—¼ inch by 10-6; Ohl—18 gauge by 10 ft. 6 inch; Power forming roll machine: Rafter horizontal rotary—10 pairs rolls—14 gauge by 20 inch width capacity; Foot (power) punches—pendulum type: five Excelsior #10; Perkins #6A; Dawes; Robinson #1; Hand and or foot (power) shear: Pack, Stow & Wilcox—28 gauge by 30 inch; Robinson—28 gauge by

(*Continued on page* 40)

SUB-CONTRACTORS WANTED

For information, blue prints, specifications, etc., on the following items write or telephone the Philadelphia office of the War Production Board, quoting the symbol number of the item in question. You will then be put in touch with the engineer assigned to that item. Please quote the Manufacturers Record.

Ref. 2-22-1

A Maryland concern wishes to locate subcontracting facilities on Race Bearings. Material required: Oil Quench, Strain Drain at 400° F, 48-56 (Rockwell) "C" scale; Steel —Spec. 57-107D—Heat Treated to 1550° F. A minimum tolerance of .002 is necessary for this work. Quantity: 20 units per month, building up to 300 units by October 1, which will be a going rate thereafter. Tools required: Precision 52" Vertical Boring Mill, or 52" Swing Lathes—also Drop Forge Facilities to provide Race Bearing Circular Forgings 52" O.D. and 42" I.D. x 4" thick.

Ref. 2-22-2

An Illinois manufacturer requires subcontracting facilities on the following: (a) Alum-Ferrule-Conduit, size ¼" to ¾" inc. (b) Coupling-Nut, internally threaded—outside diameter ⅝" to 1 3/16" inc. x 7/16" thick for all these diameters. (c) Brass Threaded Straight Coupling, with hex. spaces between threads—lengths of Coupling 1¼" to 1¼". (d) Brass 45° Couplings with hex. space between external threads. Also large quantities of Tin Copper Braided Shielding Conduit, Aviofles Braided Covered Hose and Cellulined Hose Cellu R-1. Material necessary for this work—Brass and Aluminum. Tolerances: + —.005. Quantity: 25,000—50,000—100,000—150,000. Priority rating is A-1-A. Tools required are small Automatic Production Turret Lathes or 4 spindle Automatic Screw Machines.

Ref. 11-22-1

A Penna. firm is trying to locate facilities for the manufacture of Blanks for Spur Gears. Operations are Boring, Reaming and Turning Outside Diameter. Material, to be furnished by prime contractor, is SAE-1050 and SAE-5145. Tolerances: +.0015 to —.005. Quantity: 6,000 pieces, Single-spindle Screw Machine that will handle Bar Stock through the Spindle, for which the rough diameters are 3⅛" to 4⅛", is required for this work.

Ref. 13-22-1

The Government is lining up facilities to produce a large variety of TORPEDO MECHANISM COMPONENTS, including many special types of Screws, Cap Screws, Bolts and Studs; also, special Pins, Hollow Shafts, etc. Material: Brass, Steel, and Stainless Steel. All Forgings to be furnished by prime contractor. Majority of Components are to be finished to a close tolerance. A large quanity is needed and production is to start as soon as possible. Contract by Negotiation. Equipment necessary for this work: Turret Lathes, Screw Machines, Milling, Drilling, Precision Grinding of various sizes according to type of Component; also, Heat Treating and Testing Equipment.

Ref. 13-22-2

The Government requires subcontracting facilities for AIRCRAFT COMPONENTS, Turnbuckle Assemblies, Turnbuckles, Turnbuckle Eyes (Pin Type & Cable Type), Turnbuckle Forks, Streamlined Tie Assemblies, Adjustable Control Rod Ends, and Tie Rod Terminal Tube Clamps. Material required is largely Bar Stock. Tolerances are to be fairly close. Quantity varies according to the item, and production is to start as soon as possible. Necessary equipment: Stamping Presses, Screw Machines—or equivalent, Light Milling Machines, Drilling and Light Forging Equipment—all of various sizes; also Heat Treating Equipment. Contract by Negotiation.

Ref. 13-22-3

A Connecticut concern is looking for subcontracting facilities for AVIATION MOTOR COMPONENTS, Diffuser Support Studs, Breather Connection Bodies, Valve Tappet Rollers, Main Crank Case Studs, Pusher Rods—Ball Ends, Valve Rocker Shafts, Exhaust Valve-Spring Washers, and Super Charge Drain Adaptors. Material necessary for this work is largely Bar Stock Steel. Tolerances—medium and close precision. Quantity—various according to the item, production to start as soon as possible. Tools required: Stamping Presses, Screw Machines—or equivalent, Light Milling Machines, Drilling and Light Forging Equipment—all of various sizes; also Heat Treating Equipment. Contract by Negotiation.

Ref. 13-22-4

A New York manufacturer wishes to locate subcontracting facilities for MAGNETO PARTS, Breaker Cams, Distributor Gear Shafts, Cam Drive Gears and other parts. Required material—Bar Stock of various sizes. Tolerances—High precision. The quanity required is indefinite. Production to start as soon as possible and to be at the rate of 1,000 a month. The following equipment is necessary for the work: Turret Lathes, Screw Machines, Milling Machines, and facilities for Precision Grinding, Heat Treating, and Hardness Testing. Contract by Negotiation.

Ref. 2-17-1

A Penna. concern requires subcontracting facilities for the production of 75 mm. Adapters. Material, to be furnished by subcontractor, is WDX-1314; tolerances .010. Quantity required: 80,000 to 100,000 per month for period six to nine months commencing as soon as possible. Priority rating A-1-c or better. Tools necessary for this work are Multiple-spindle Automatic Screw Machines, capacity 2¾" to 3", and Turret Lathes for secondary operation.

Ref. 8-21-1

The W.P.B. Office in Allentown, Penna. wishes to locate subcontracting facilities on Gray Iron Castings weighing a ton or more, consisting of Cored Work in Dry Sand Molds. Companies interested should contact the Allentown office and state the maximum weight per casting, maximum output per week, and whether or not they have ovens for drawing Molds.

Ref. 11-15-1

An Elmhurst, N. Y. firm requires subcontracting facilities on small Shafts and Assembly for Instruments. The Shaft Assembly consists of three parts: (1) The Shaft, which is made from ¼" Hex. H.H. Brass, is 1.239 long and finished diameters vary from .047 to .0725. (2) The Short Shaft Pivot is made from Pinion Steel and is .89 long and diameters vary from .047 to .0135. (3) The long Shaft Pivot is made from Pinion Steel and is .374 long and diameters vary from .047 to .0165. Tolerances: + —.0005. Concerns with Watchmaking Facilities of Production Type best qualified to make this article. Quantity: 20,000 pieces at the rate of 2,000 to 3,000 per week, production to start as soon as possible.

Ref. 11-15-2

An Eau Claire, Wisconsin manufacturer requires subcontracting facilities on Body for M 48 Detonating Fuze. Materials are Forgings or Bar Stock. Tolerances: + —.005. Quantity: Large production. Tools required are: Multi-spindle Screw Machines 2⅝" capacity, Finished Forgings, and Threading Facilities.

Ref. 11-15-3

A Grand Rapids, Michigan firm requires subcontracting facilities on Component Parts for ANMLOLAL Bomb Tail Fuze—six different Component Parts. Quotations will be considered on any one or more. Material: Stainless Steel, Cold Drawn Steel, Seamless Steel Tubing and Steel Bar Stock. Tolerances required: + —.001. Quantity: 500,000 at rate of 50 to 100 M per month. Tools necessary for the work are Automatic Screw Machines ¾" D. to 1¾" D. Threading Operations ¾" to 1¾" D.

Ref. 11-17-1

An Illinois prime contractor is looking for subcontracting facilities to manufacture Component Part or Parts of M-48 and M-51 Fuze. They are particularly interested in obtaining desirable subcontractors for the Screw Machine Parts. Prime contractor will furnish materials for all Brass and Steel Parts. Delivery approximately 70,000 per week.

Ref. 11-20-1

A Penna. concern is trying to locate facilities for manufacturing 22 groups of miscellaneous sizes of Pins and Latches. Material—Duronze III—S.A.E. 3250—C.R.S. Quantity—5,000 to 50,000 pieces of each item. Production to start as soon as possible. Priority rating is A-1-A. Tools required—Automatic Screw Machines ⅜" and ⅝" Bar Stock Capacity, Precision Grinding, and Heat Treating Equipment.

Ref. 11-20-2

A New Jersey prime contractor is looking for subcontracting facilities for a Component Part. Approximate size of this piece is 2.295 diameter, over all length 1.635. Material needed for the work is Steel WDX 1314 Cold Drawn. Quantity: 100,000 pieces at the rate of 1,000 per day, starting July 15. Tolerances: + —.005. Tools required 2⅝" capacity Multi-spindle Screw Machine.

(*Continued on page* 40)

Sub-contracts Wanted

(*Continued from page* 38)

30 inch; Hand (power) brake: Dreis & Kremp—8 ft. cornice; Dreis & Kremp—10 ft.; Dreis & Kremp— 4 ft.; two Peck, Stow & Wilcox—20 inch; Blacksmith tools: power draft forge; Hoosfeld Universal iron bender; ⅜ inch eye and U bend forging machine with furnace; Milling machines: Cincinnati #3 with vertical attachments; Cincinnati #3 old style; Whitney #6 hand operated table; Crank shapers: Smith & Mills—20 inch; Walcott—16 inch; Back-geared engine lathes: LeBlond 17 inch by 8 ft. screw cutting; Lodge Davis 16 inch turret; Barnes 18 inch by 6 ft. screw cutting; Reed 20 inch by 10 ft. screw cutting; two manufacture unknown—15 inch and 16 inch; Power keyseater: Davis #2; Power bolt thread machine: Jarecki #3—revolving chuck; Portable metallurgical furnace; Electric power drill presses: (floor-mounted—sliding head) Barr—16 inch swing; Henry & Wright—20 inch swing—2 spindle—power feed—tapper attachment; Komomo—24 inch swing—Tapper attachment; Lodge Davis—24 inch swing—Backgeared—power feet; Barnes—22 inch swing—back-geared—power feed; Reed 16 inch swing; (floor mounted—stationary head) three Barnes—20 inch swing; unknown manufacture—20 inch swing—tapper attachment; Burke—10 inch swing; (floor mounted—radial post) Van Dorn—32 inch double arm ½ inch capacity; (multiple drill and tapper) Natco—Type 12—½ inch capacity; Portable electric drills: twelve Black & Decker—4½ inch capacity, 2⅝ inch capacity, 6¼ inch capacity; six Van Dorn—3½ inch capacity, 1⅜ inch capacity, 2¼ inch capacity; three Louisville Electric—1 each ½ inch, ⅜ inch and ¼ inch capacity; U. S. Electric—½ inch capacity; Hisey Wolf—5/16 inch capacity; Cincinnati Electric—¼ inch capacity; Independent Pneumatic—½ inch capacity; Portable electric tappers: eight Black & Decker—#H-2; Van Dorn; Electric grinders: (floor-mounted) Fay & Egan #196—30 inch knife; Blout No. 6—16 inch double end; Diamond—16 inch double end; Sterling—16 inch double end; Blout No. 2—9 inch double end; B. M. Company—10 inch double end; Yankee twist drill; (bench mounted) Westinghouse—6 inch single; Van Dorn—6 inch double end; Black & Decker—8 inch double end; (portable) Haskins—flexible shaft; Black & Decker—flexible shaft; Clark Jr.; Dumore—center grinder; Larkin filing machine; Electric disc sanders: American—8 inch radial surface sander; Special 28 inch by 16 inch diameter drum sander; four unknown manufacture—surface sander; Metal saws: Racine power hack saw—12 inch blade; four special double mitre saw—8 inch saw; four high speed friction saws (Ryerson steel shape—26 inch saw, Dewalt Mitre—12 guage capacity, Towsley—vertical cut off, White—mitre—12 gauge capacity); three metal band saws (Armstrong Blum—18 inch—adjustable yoke, Crescent—26 inch; Economy — 20 inch); Trip hammers: High Speed Hammer Co.—13 inch throat; Chicago—portable; three pneumatic ½ inch capacity hammers; Kalamein machinery—power: two draw benches—24 ft. 0 inch long; two vibrators—casing—15 inch and 7 inch capacity; vibrator—moulding coverer; vibrator—moulding creaser; special casing crimping machine; Bliss—rail and stile end closing machine; Mattison—double belt power sander 2 ft. 8 inch by 6 ft. 10 inch turntable; Portable power equipment: Westinghouse mortiser drill; Wappat mortiser drill; Woodack Electric Co. groover; Hand (power) machines: plaster board cutter; two Francis glue presses; Niagara 36 inch slip type 2 inch roll form; Peck, Stow & Wilcox crimper; Wood working machinery: (cut off saws) two Fay & Egan 17 inch swing type; two Porter—sliding head; Special—under cut—Crescent—18 inch swing type; (rip saws) manufacture unknown; Fay Variet—bench; Gosiger—bench; Sidney—bench; Mattison—self feed—20 inch capacity; (trimming saw) Fay & Egan—16 inch stationary—sliding table; (band saw) Cordesman—36 inch; (shapers and planers—self feed) Fay & Egan—4 side moulder, matcher and planer; Fay & Egan—4 side moulder; Whitney—24 inch by 8 inch single surfacer; Fay & Egan #267 double spindle shaper; (mortiser) Greenlee—vertical hollow chisel; New Britain—vertical chain; unknown—3 spindle boring machine; (tenoner—hand feed) Cordesman—4 inch single; Fay & Egan—single; (jointer) Fay & Egan—9½ inch; two Fay & Egan—12 inch hand feed; Spray booth and accessories; dip tanks and drain boards; Graining equipment; drying oven; baked enamel oven; air compressors; cadmium plating plant; and mono-rail (overhead) system throughout shop with four hoists, 400 hangers, one crane—17 ft. 4 inch span—1 ton.

If you want a sub-contract or a sub-contractor write the Manufacturers Record and watch these pages each month.

Sub-contractors Wanted

(*Continued from page* 39)

Ref. 13-16-1

The Government requires subcontracting facilities for Complete Socket Wrench Sets (¼" square drive). Material: Bar Steel to develop hardness of Rockwell C 35-C 50 after heat treating. Quantity: 4,900 sets. Production to start as soon as possible. Tools required are: Automatic Lathes No. 0 and No. 1, Broaching Facilities, Metal Stamping Facilities, Heat Treating Equipment, and Milling Machines.

Ref. 13-16-2

A Philadelphia firm is lining up facilities for making 350 complete sets of Steel Castings for Marine Propulsion—Commercial Grade Steel .25 and .35 carbon; Lower Casting finished weight 650 lbs. and Upper Casting finished weight 2,350 lbs. Patterns only to be furnished by prime contractor. Also, Machining Facilities for these Castings are needed. Tolerances—precision work. Equipment necessary for the work: Steel Foundry, Horizontal Boring Mills 4" to 5" bar, Heavy Type Planers, Heavy Radial Drills, or equivalent, and Annealing Equipment. Production to start by July or August, 1942.

Ref. 13-20-1

The Government requires subcontracting facilities for the manufacture of a large number of Miscellaneous Small Gun Parts. All Forgings to be furnished by prime contractor. Tolerances—Precision work. Quantity to be based on monthly deliveries of 500 to 1,600 for indefinite period and production to start at once. Production Equipment for Light Milling, Drilling, Turning, and Boring. Contract by negotiation.

Ref. 16-B8-1

A Philadelphia firm requires subcontracting facilities on the following: Hydraulic Manifolds, Alloy Steel Castings up to 500 lbs., and Open Hearth Steel Castings up to 15,000 lbs.

Ref. 16-17-1

An Eastern Penna. concern requests several Steel Forgings and Machining of same on Crank Shafts, and Component Parts. Equipment desired: Automatic Lathes, Grinders, Drop Forging Hammer, Hand Screw Machines, Automatic Screw Machines, Internal Grinders, Sizomatic Centerless Grinders, Lapping, Up-setting Machines, External Grinding Machine.

Ref. 16-18-1

A New Jersey shipyard requires subcontracting facilities for Forged Steel Rudder Stocks, 14 in number; also facilities for Machining and Composition Sleeve for same. First Rudder Stock to be ready for delivery June 1, 1942, and one each month thereafter until completion of order.

Ref. 16-20-1

A Western Penna. concern requests subcontracting facilities for Machining Heavy Castings. Machinery necessary for this work is 8' x 30' Stroke Planer.

Ref. 16-20-2

A Midwestern concern is looking for Forging Facilities for several medium size Straight Shafts and Crank Shafts.

Ref. 16-21-1

A Philadelphia concern is looking for Machining Facilities to machine Bar Stock and Forgings. Equipment needed—Drill presses, Lathes, Threading Machines, Gear Cutting Machines.

Ref. 2-24-1

A New York concern requires subcontracting facilities on Shell and Fuze Body. Material necessary for this work is Cold Drawn Heat Treated Steel SAE 3135 or SAE 3435. A minimum tolerance of .005 is required. Quantity desired is 600,000. Equipment necessary—1¾" Automatic Screw Machines or Automatic Turret Lathes; Heat Treating Facilities; and Cadmium Plating Facilities.

Ref. 11-24-1

A New York company wishes to locate subcontracting facilities on Adapter and Striker Nuts. The required material is Cold Rolled Steel WD 1115. Tolerances: Minimum .005. The work is to be produced at the rate of 1,500 a day, and production is to start as soon as possible. 2" to 3" Automatic Screw Machines or Automatic Turret Lathes are necessary for this work.

Ref. 13-24-1

The Government is lining up facilities for making the following: Inductances, open core, A. F. type. Magneto-generator parts. P. A. System—O. A. Gain, 104 decibels at 1,000 cps, output 50 W at not over 5% distortion from 100 cps to 3,000 cps and 10% from 60 cps to 10,000 cps, input power line 105-125 V A C, 58-62 cps; Set includes 2 microphones, 6 loud speakers, 2 complete

(*Continued on page* 64)

More Synthetic Rubber Production

The War Production Board has authorized the Reconstruction Finance Corporation to provide facilities for an annual productive capacity of 700,000 tons of Buna S synthetic rubber to be in operation not later than the end of 1943.

This represents an increase of 100,000 tons in the Buna S program previously authorized by the War Production Board, and is in addition to the planned capacity for Butyl synthetic rubber and neoprene, totalling 100,000 tons.

The War Production Board said that the 700,000-ton Buna S program is to be given all the priority and allocation assistance needed to assure the production of not less than 350,000 tons during the calendar year of 1943.

All the synthetic rubber to be produced for many months must be reserved for military uses, and none will be available for civilian uses, such as automobile tires.

March Shipments of Machine Tools 73% Over Last Year

The value of new machine tools, presses and other metal working machinery shipped during March was $108,600,000 according to William H. Harrison, Director of Production of W.P.B.

Shipments of machine tools alone mounted to 24,300 units, with a total value of $98,400,000. During February, 20,307 units, valued at $84,355,000 were shipped.

"Production of metal working machinery has reached a rate of approximately $1,300,000,000 a year and is steadily on the increase," Mr. Harrison said. "Last year the value of metal working machinery was about $840,000,000 and the present rate represents an increase of 55 per cent.

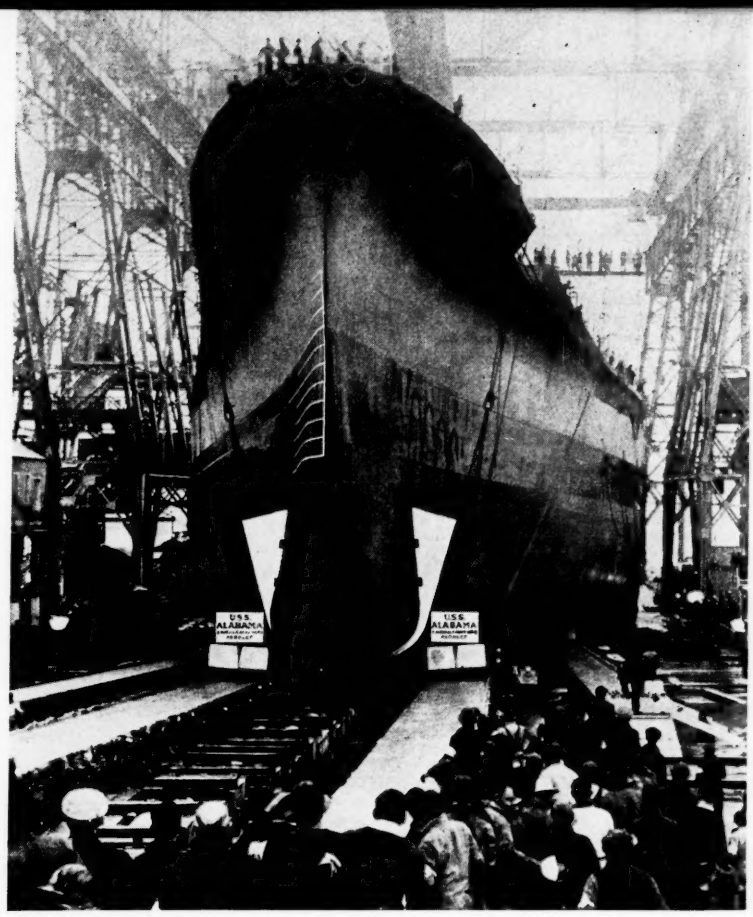
"Compared with the same month of last year, the March value for all metal working machinery is an increase of 73 per cent.

"On the basis of camparable companies which reported during February and March, the value for the latter month represents a 16 per cent increase. On a per day comparison between the two months, March represents an increase of 5 per cent.

Total U. S. War Funds Now Total $162,416,000,000

War funds made available by Congress or the Reconstruction Finance Corporation since June, 1940, totaled $162,416,000,000 when President Roosevelt signed the Sixth Supplemental War Appropriation Act of 1942 on April 28. This Act carried cash appropriations and net contract authorization of $19,138,000,000.

The $162,416,000,000 total includes approximately $6,000,000,000 for the Navy Department, which does not become available for spending until fiscal 1943, and has not been allocated officially for specific purposes. The total does NOT include $4,096,000,000 contracted by foreign governments for war production in the United States.



One of the growing number of United States battleships named after southern states. This one, the U. S. S. Alabama, was launched a short while ago at a southern shipyard—the Norfolk Navy Yard at Portsmouth, Virginia. [Official U. S. Navy Photograph]

The most improtant item of expenditure provided for in the latest appropriation is $8,761,000,000 for airplanes. Posts, depots and stations call for $6,123,000,000, virtually double the amount previously appropriated for such purposes. Miscellaneous munitions and supplies covered in the Act came to $2,268,000,000.

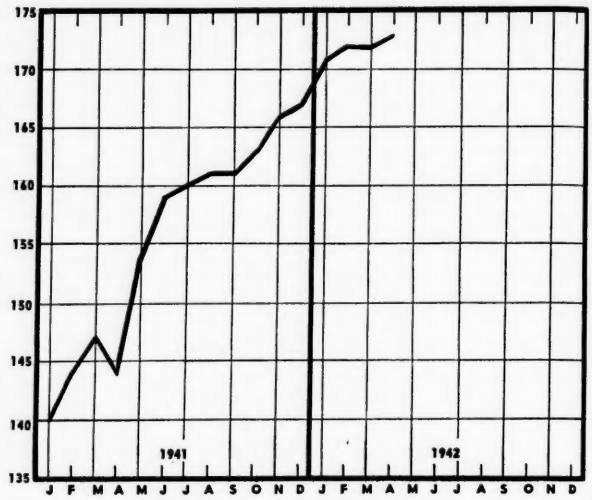
The Act also includes: $750,000,000 for pay, subsistence and travel of the armed forces, $728,000,000 for ordnance, $348,000,000 for industrial facilities, $31,000,000 for naval ships and $129,000,000 for miscellaneous expenditures.

The following table shows a distribution of funds by object before the signing of the Sixth Supplemental War Appropriations Act of 1942, net funds covered by the bill, totals at the end of April and a percentage breakdown:

ESTIMATE OF WAR FUNDS AVAILABLE THROUGH APRIL 30, 1942
(In millions of dollars)

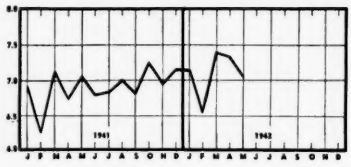
Object	*Made Available June 1940-March 1942*	*Sixth Supplemental War Appropriation Act of 1942*	*Total at End of April*	*% of Total War Funds*
Airplanes, engines and parts	26,796	8,761	35,557	23
Ordnance	31,394	728	32,122	21
Miscellaneous munitions and supplies	17,324	2,268	19,592	12
Naval ships	15,426	31	15,457	10
Industrial facilities	14,017	348	14,365	9
Posts, depots and stations	7,061	6,123	13,184	8
Merchant ships	7,484	....	7,484	5
Stockpile and food exports	5,791	....	5,791	4
Pay subsistence and travel for the armed forces	4,180	750	4,930	3
Housing	1,392	....	1,392	1
Miscellaneous	6,413	129	6,542	4
	137,278	19,138	156,416	100

Industrial Production Trends



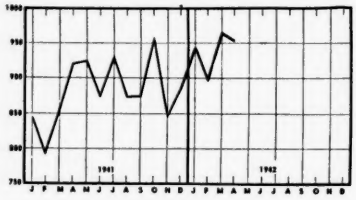
INDUSTRIAL PRODUCTION
(*Adjusted Index* 1935-39=100)

Industrial production, as recorded on the 1935-1939=100 adjusted index, stood at 173 for April, according to first reports. This is a gain of one point over the revised figures for February and March, both of which were constant at 172. It is noticeable that in the last few months the increase has been much less precipitate than for some time past, but the new factories and additions to old ones now being erected will have a marked effect in months to come.



STEEL INGOT PRODUCTION
(*Millions short tons*)

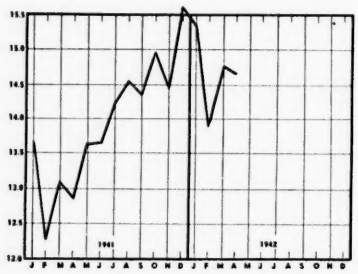
Steel production in April is estimated to have totalled 7,122,313 tons, compared with 7,392,911 tons in March. The operating rate of capacity was 97.7% in April and 98.2% in March. This latter is in striking contrast to the figures of a year ago when the operating rates of capacity for April and March were 97.6% and 99.6% with corresponding production of 6,754,179 and 7,124,003 tons respectively. This is tangible evidence of the growth of the steel industry within the past year.



COTTON CONSUMPTION
(*Thousands of bales*)

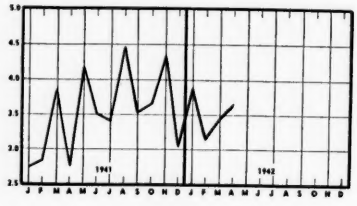
Cotton consumption set a new all-time record in March with 966,631 bales, declined slightly to 955,000 bales in April, but the latter is, even so, the second highest amount consumed, surpassing the previous high of last October by 1400 bales. The necessity for converting certain parts of the textile industry for the production of more cotton and wool goods indicates that even these new records are likely to be surpassed in the future.

Electric power production declined less than seasonally in April to 14,675 million kilowatt hours from the 14,778,578,000 kilowatt hours produced in March. The longer daylight hours, made more evident by war-time, have had a beneficial effect upon the amount of electric power available for industrial use.



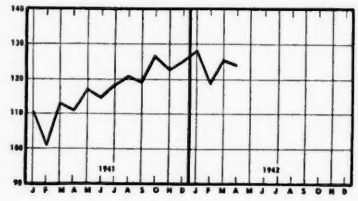
ELECTRIC POWER PRODUCTION
(*Billions kilowatt hours*)

Carloadings, which numbered 3,171,000 in March, jumped to 3,623,252 in April, according to preliminary reports. This is in striking contrast to the usual trend when a drop is recorded for April. Present indications are that the 14.6% estimated increase of carloadings for the second quarter of 1942 above actual loadings in 1941 will be more than fulfilled.

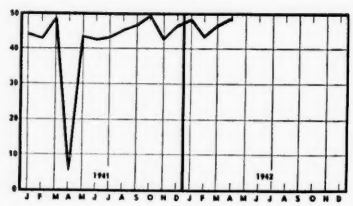


CARLOADINGS
(*Millions*)

Crude petroleum production statistics continue to lag and preliminary estimates are often revised slightly downward. The latter, according to available information, show that in April there was little change from the March figure, with 125,500,000 recorded for March against 124,700,000 for April. Meantime, official figures for February show a total of 113,961,000, or a daily average of 4,070,000 barrels. The latter, while well above the corresponding figure of 1941, is far below the January average of 4,137,000 barrels and is the largest decline since 1940.



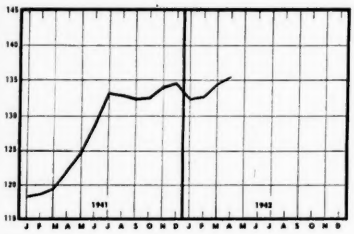
CRUDE PETROLEUM PRODUCTION
(*Millions of barrels*)



BITUMINOUS COAL PRODUCTION
(*Millions of tons*)

Bituminous coal production in April rose to 48,790,000 tons, according to preliminary returns, compared with 47,400,000 tons in March. This is the highest point reached this year but still below the total recorded last October. Present demands, together with those anticipated for the future, indicate that production will need to be stepped up materially.

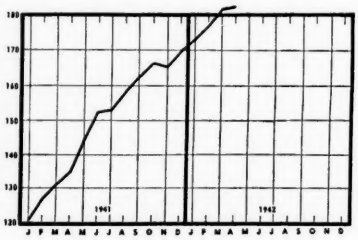
Factory employment, as recorded on the 1923-1925=100 adjusted index, again rose during April to 135.4 against



FACTORY EMPLOYMENT
(*Adjusted index,* 1923-25=100)

134.5 in March. In the latter month total civil non-agricultural employment amounted to 40,298,000, an increase of 303,000 from the previous month and 2,537,000 from the same period of 1941. The largest gain among major industrial groups in March was in construction, with an increase of 102,000 mainly due to activity in the war program.

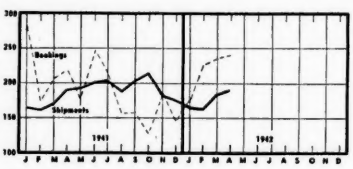
Factory payrolls likewise continued their upward trend, with 183 being the recorded figure for April on the 1923-



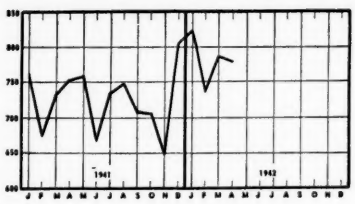
FACTORY PAYROLLS
(*Index,* 1923-25=100)

1925=100 index, compared with 181.9 for March and 134.4 for April 1941.

Structural steel bookings, which have been increasing steadily since the beginning of the year, continued upward in April to 240,000 tons against



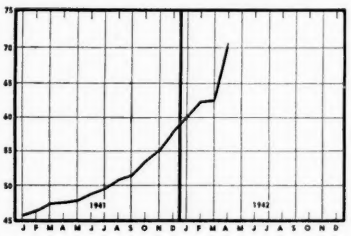
STRUCTURAL STEEL
(*Thousands of tons*)



SOUTHERN PINE PRODUCTION
(*Million board feet*)

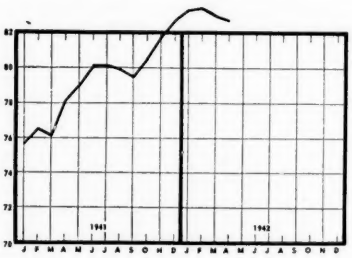
236,791 tons in March and 218,018 tons in April 1941. Shipments likewise are continuing to rise and totalled 190,000 tons in April, compared with 184,715 tons in March and 189,751 tons in April 1941. The only decline so far suffered this year was in the short month of February when 162,007 tons were shipped.

Southern pine production statistics have been revised for several months past with the result that production in February amounted to 738 million board feet and 787 million board feet



FEDERAL PUBLIC DEBT
April 30, 1942
(*Billions of Dollars*)

in March. Early returns for April indicated that another slight drop took place to 780 million board feet—the May figure is expected to be considerably higher and the previously anticipated decline is expected to be deferred

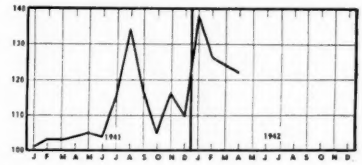


PUBLIC WAREHOUSE SPACE
(*% of capacity occupied*)

in view of the constantly growing construction program.

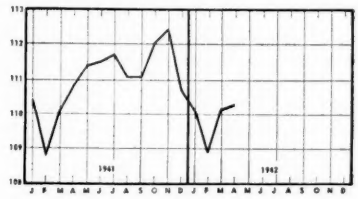
Public warehouse space occupied is still well above the anticipated amount with 82.8% of capacity occupied in April; the latest complete figures show that in February 83.7% was occupied. The expected decline will be very gradual under government regulatory methods of commodity control.

Retail trade, as reflected by department stores sales on the 1923-1925=100 adjusted index, is believed to have remained constant in April with the figure of 122 shown for March. The downward trend has nevertheless definitely started and will continue slowly but steadily for some time to come.



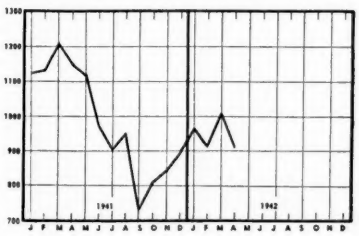
DEPARTMENT STORE SALES
(*Adjusted index,* 1923-25=100)

U. S. Treasury Bonds average price which made a welcome comeback in March to 110.2 from the rapid decline, started last December, showed a tendency to level off with an average of 110.3 for April. It is likely, however, that the average will go slightly higher within the next month or two.



U. S. TREASURY BONDS
(*Average price per* $100 *bond*)

Commercial failures, which have been rising fairly consistently but slowly since last September and stood at 1,048 in March, dropped down to 909 in April, according to preliminary returns. Total liabilities on the other hand, which had been steadily lower, jumped in March to $12,011,000 but a considerable drop is believed to have occurred again in April.



COMMERCIAL FAILURES
(*Total number*)

More Sea-Going Tugs to Be Built in South

The Maritime Commission today announced that contracts have been awarded for the construction of eight additional sea-going tugs of the V4-M-A1 design.

Of the eight vessels, four are to be constructed by the Avondale Marine Ways, Inc., at New Orleans, Louisiana, and the remaining four by Froemming Bros., Inc., Shipbuilding Division, at Milwaukee, Wisconsin. Each of these companies now has a contract for the construction of four tugs of the same design. These awards bring the total number of tugs of this type now under order to 38.

All are to be delivered prior to July 1, 1943.

Pulp and Paper Statistics of the South

Official statistics concerning the pulp and paper industry of the entire South are given below for the first time. Heretofore, published statements were largely estimates since the figures for many states could not be divulged. The latter is still true, but by the courtesy of the Bureau of the Census a composite of the entire South has been specially compiled for the MANUFACTURERS RECORD.

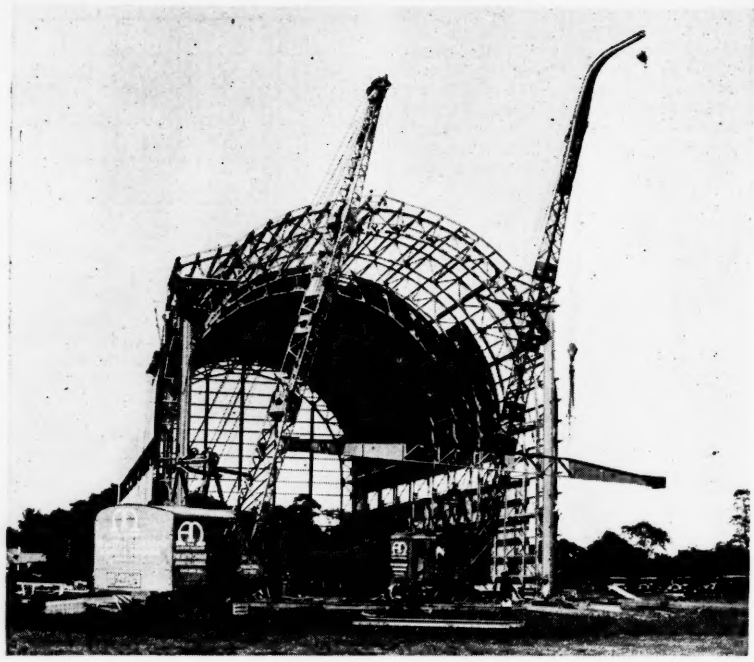
The quantity of paper and paperboard produced increased materially from 1939 to 1940 in spite of the comparatively small amount of construction that was completed in the industry. The total production in 1940 of 3,371,202 tons was almost 25 per cent of the nation's output. Of the total pulp wood consumed and woodpulp produced in the country during 1940 more than 42 per cent was consumed and produced in the South.

PAPER AND PAPERBOARD PRODUCTION

State	Quantity (Short tons) 1940	1939
South	3,371,202	2,907,772
Florida	392,003	370,778
Louisiana	753,752	593,902
Maryland	161,709	155,525
North Carolina	154,232	128,022
Tennessee	[1]	116,374
Texas	71,037	[1]
Virginia	577,625	510,844
West Virginia	51,825	55,897
Other Southern States[2]	1,209,019	976,430

[1] Included in figures for "Other Southern States."

[2] Includes data for Alabama, Arkansas, District of Columbia, Georgia, Mississippi, Missouri, South Carolina for both years and in addition, Tennessee for 1940 and Texas for 1939. These States are combined to avoid disclosing data for individual establishments.



Two 15-ton Crawler cranes at work in the building of a Goodyear blimp hangar in Illinois. The Austin Company of Chicago, Illinois, were the contractors.

Smokeless Powder Production Now Exceeds World War Peak Output

Production of smokeless powder in the United States on March 31, 1942, less than four months after we entered the war, had surpassed the peak output of the first World War, Charles A. Higgins, president of Hercules Powder Company, stated recently befor the Society of the Plastics Industry at Hot Springs, Virginia.

The foresight of the Ordnance Department and the industry was to a large extent responsible for the tremendous impetus to explosives production in the United States, Mr. Higgins said.

Expansion in the manufacture of smokeless powder and other explosives has been responsible for a decrease in plastics production this year, Mr. Higgins told the plastics makers.

Priorities have diverted chemicals needed for plastics to the production of explosives. Pointing out that smokeless powder is actually a plastic, he explained that the chemicals needed for its production are the same as those needed for plastics.

The mounting demand for plastics for the Army and Navy has been intensified by the crude rubber shortage, since some plastics are replacing rubber in hundreds of military and essential civilian uses.

He predicted a shortage of plastics will develop unless the plastics industry and the Government build new plastic chemical plants soon.

The chemicals used by the plastics industry which now have been allocated to explosives production are nitric and sulfuric acids, ammonia, alcohol, formaldehyde, cellulose, and others.

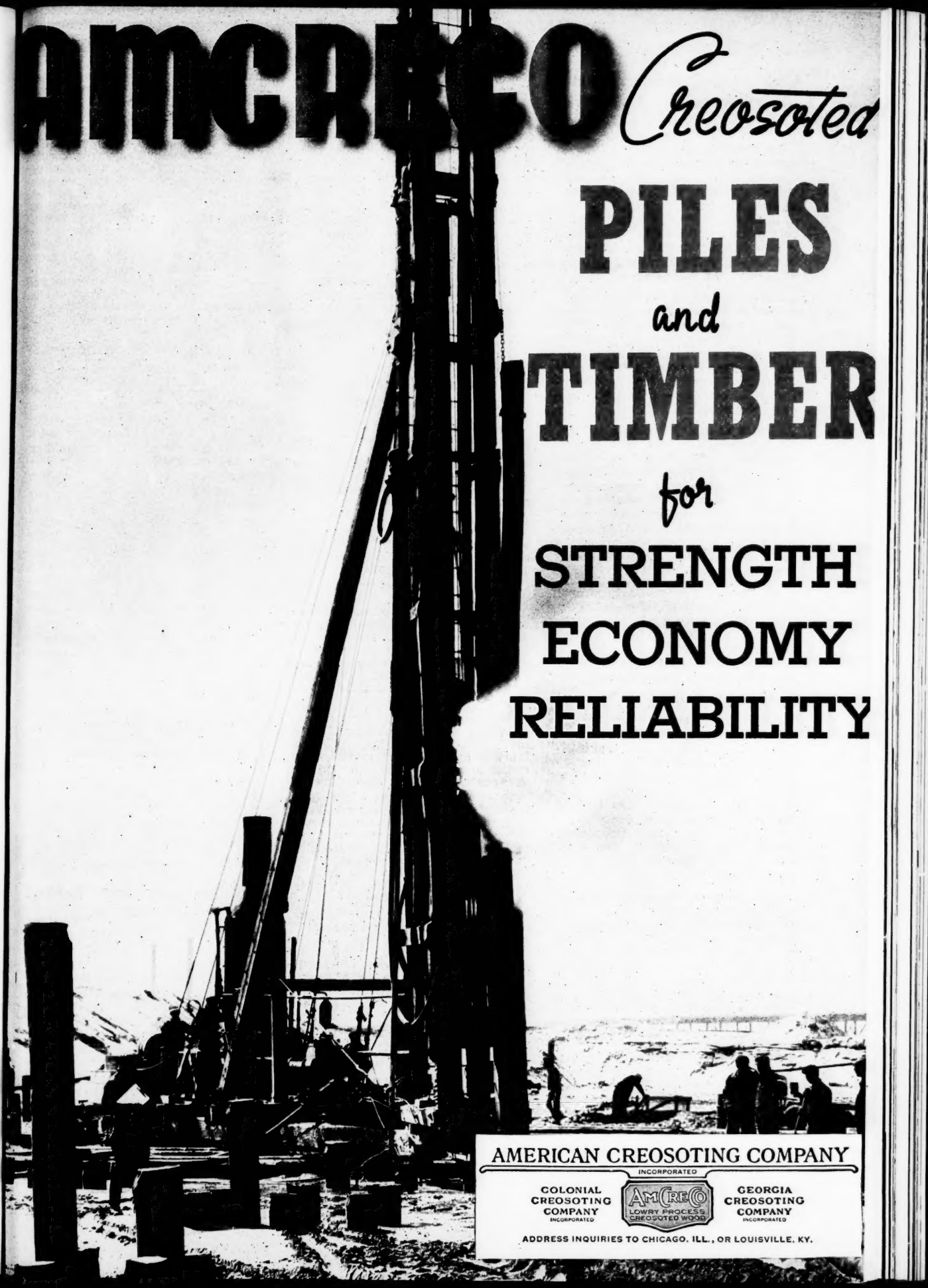
A new Plastics Planning Board which he proposed the Society of the Plastics Industry should create, would determine what plastics will be required in the war program, and how many plastics plants and chemical plants will be necessary to supply these plastics.

PULPWOOD CONSUMPTION AND WOOD-PULP PRODUCTION

State	1940 Wood consumed Cords	1940 Wood consumed Cost	1940 Pulp produced Short tons	1940 Pulp produced Value	1939 Wood consumed Cords	1939 Wood consumed Cost	1939 Pulp produced Short tons	1939 Pulp produced Value
South	5,794,123	$32,278,293	3,688,504	$103,934,119	4,373,294	$23,208,807	2,758,122	$65,494,043
Alabama	387,237	2,021,988	246,964	5,690,637	[1]	[1]	[1]	[1]
Florida	936,112	4,909,843	583,204	17,002,536	689,627	3,768,994	449,162	9,145,526
Louisiana	1,313,343	7,014,615	864,552	20,134,263	930,071	4,477,437	589,672	13,730,082
North Carolina	542,281	3,357,954	294,130	11,872,225	340,921	2,024,989	179,636	7,045,509
Virginia	774,260	4,789,955	496,918	15,276,672	646,417	3,748,071	402,929	11,336,858
Other Southern States[2]	1,840,890	10,183,938	1,202,646	33,957,786	1,766,258	9,189,316	1,136,723	24,236,068

[1] Included in "Other Southern States."

[2] Includes data for Arkansas, Georgia, Maryland, Mississippi, South Carolina, Tennessee, and Texas for both years and in addition, Alabama for 1939. These States are combined to avoid disclosing data for individual establishments.


AMCREO
Creosoted
PILES
and
TIMBER
for
STRENGTH
ECONOMY
RELIABILITY
AMERICAN CREOSOTING COMPANY
INCORPORATED
COLONIAL CREOSOTING COMPANY INCORPORATED
AMCREO
LOWRY PROCESS CREOSOTED WOOD
GEORGIA CREOSOTING COMPANY INCORPORATED
ADDRESS INQUIRIES TO CHICAGO, ILL., OR LOUISVILLE, KY.

Changes and Promotions in Carborundum's Official Family

Dr. Frank J. Tone retired as President of the Carborundum Company of Niagara Falls, April 21st and was elected Chairman of the Board of Directors. The new President is Arthur A. Batts, long associated with the Company and since March 1927 was its Secretary. Charles Knupfer, was named as Senior Vice President and will continue as head of the Sales Department.

Henry P. Kirchner was named as Executive Vice President in charge of operations and elected a member of the Board. F. Jerome Tone, Jr., Sales Executive was elected to the Board and made a Vice President. Edward R. Newcomb, Sales Executive was also elected as one of the Vice Presidents of the Company.

Former Treasurer Frank H. Manley, Sr., whose identity with the Company dates back to 1896, retired and is succeeded by T. B. Foot. Three other appointments of interest were also announced. Frank A. Vockrodt, formerly auditor, was made Secretary succeeding Mr. Batts and A. J. D'Arcangelo and Gilbert J. Stewart were named as Assistant Treasurers. All appointments are effective as of April 21st.

Dr. Frank J. Tone as Chairman will continue to be actively interested in the affairs of the Company in an advisory capacity. Dr. Tone's connection with the Company dates back to July 15, 1895 just shortly after the late Edward Goodrich Acheson created the first man-made abrasive, Carborundum. His early association with Dr. Acheson and his subsequent achievements in the field of electro-chemistry have brought him many high honors. At a joint meeting of the American Section of the Society of The Chemical Industry in 1938, he was awarded the Perkin Medal. He is also the recipient of the Edward Goodrich Acheson medal and was the first to receive the Jacob F. Schoellkopf Medal from the Western New York Chapter of the American Chemical Society in 1931.

The new President Arthur A. Batts takes on his new duties as head of one of the World's largest abrasive manufacturing companies after a splendid record of past service to the organization. Not only has he become prominent in the field of industry, but has been long identified with many local civic activities as well as with several National organizations.

Next to Dr. Tone, the longest record for service to the Company was enjoyed by Frank H. Manley, Sr., who is retiring as Treasurer. He came with The Carborundum Company Februray 15, 1896 about a year after the discovery of Carborundum and the organizing of the Company. He has seen the organization grow from a rather humble beginning to the great institution that it is today. His retirement brings much regret to his host of friends and associates.

Charles Knupfer, Senior Vice President, was long identified with the foreign sales activities of the Company having been its Continental Sales Representative. In January 1936 he returned to the United States and Niagara Falls to take charge of general sales.

Henry P. Kirchner, Executive Vice President in charge of operations, came with The Carborundum Company in 1919 as engineer in charge of maintenance.

Other members of the present Board of Directors include Henry A. Phillips, George C. Burgwin, Jr., Richard K. Mellon and George W. Wyckoff of Pittsburgh.

Lacquer May Substitute For Tin On Milk Cans

A lacquer-substitute for the tin coating on cans used for evaporated and condensed milk and on the cans used for shipping fluid milk and cream has been developed by Paul D. Watson, associate chemist of the Bureau of Dairy Industry, U. S. Dept. of Agriculture.

Mr. Watson's lacquer, on which he has just filed an application for a public service patent, is made largely from lactic acid, with a small proportion of castor oil or some other vegetable oil.

Lactic acid is obtained by fermenting the milk sugar in whey, which is a by-product of cheese and casein manufacture. Commercial production of lactic acid from whey, as well as from other agricultural sources, is already established. Finding a profitable outlet for all the whey produced at large cheese factories has long been a difficult problem.

Preliminary tests with the new lacquer have given promising results. All the ingredients needed are readily obtainable, and no unsurmountable difficulties in making or applying the lacquer are apparent, Mr. Watson says.

To be satisfactory as a protective coating in milk cans and other food containers a lacquer must not impart a flavor of any kind to the contents. Tests with evaporated milk that was sealed in lacquered cans and sterilized in the Bureau's laboratories showed the milk to be still normal in flavor and appearance after a month of storage.

Trials are now under way with ordinary 5- and 10-gallon milk cans made of steel, that have been coated with the new lacquer inside and out. To date the cans have been in use for about a month in hauling milk from the Beltsville Research Center to the Bureau's laboratories in Washington and they have shown no adverse effects on the flavor or quality of the milk. They have resisted all destructive effects of water, steam, and alkaline solutions ordinarily used in washing dairy utensils.

The only defect so far appears to be a tendency for the lacquered surface to wear thin on the neck of the lid and in the throat of the can. These areas where the wear is greatest may have to be coated with tin and the lacquer used on the rest of the can only. Cans are now being so treated to test this possibility.

One disadvantage in the commercial application of the lacquer appears to be the 30- to 40-minute period required for baking, which is somewhat longer than the can industry is equipped to use at present.

While the present research is directed mainly toward insuring a supply of suitable containers for milk and other dairy products in spite of the tin shortage, protective lacquers that can be applied directly to iron and steel would be of value to the whole canned food industry. The Bureau chemists have developed a number of other lacquers, using lactic acid as a base, which under present conditions should be useful in coating containers for foods that do not require processing or sterilization in the container.

Bids Invited For Wooden Barges

Bids have been invited from more than 700 contractors for the construction of 180-foot wooden barges of 750 deadweight tons at 11-foot draft, and a contract was awarded for the building of 18 additional 360-foot concrete barges.

The concrete barge contract was awarded to the MacEvoy Shipbuilding Corporation, Savannah, Georgia, which is now building five of the fifteen such barges already under order. When fully loaded the concrete barges will have a draft of not in excess of 28½ feet. Their capacity is between 5,000 and 8,000 long tons, depending upon the bulk commodity carried.

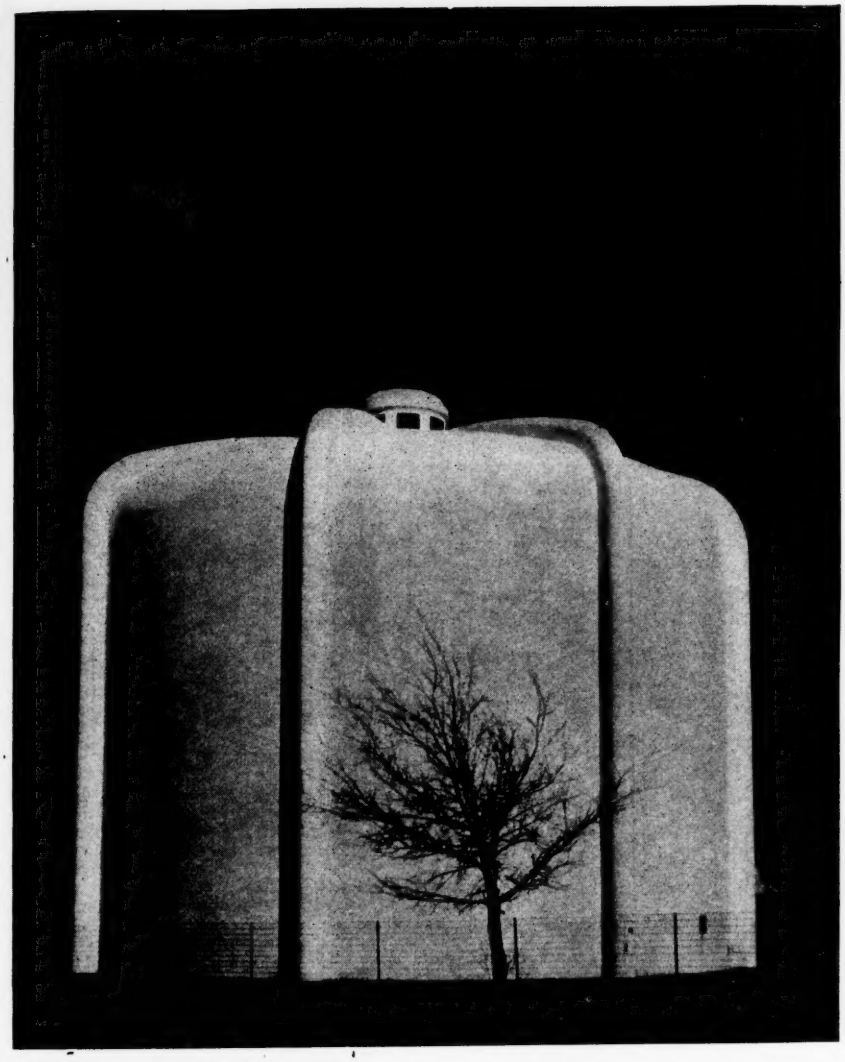
The number of wooden barges to be built was not announced, but the bids to be opened June 1, are for not more than five barges for each contractor. The first barge must be delivered within 150 days and the last of each five in 270 days. The barges are not self-propelled. Contractors can submit alternative designs to those proposed by the Maritime Commission, if they have comparable characteristics, providing they bid also on the Commission design. Together with the bids, contractors are to submit full information on their plant and equipment.

B & O Report Shows Marked Improvement

The annual report of the Baltimore & Ohio Railroad Co. for 1941, recently sent to stockholders, shows that freight revenues for the year were the largest since 1929, and passenger revenues the largest since 1931. Total operating revenues increased more than $48,000,000 over the year preceding, the figure for 1941 being $227,503,021.56. The increase was 26.97 per cent above 1940, while operating expenses were only 21.36 per cent greater than the year before, with the result that the net revenue from railroad operations at $66,584,604.05 was 42.96 per cent greater than in 1940.

The net railway operating income also showed an increase over 1940 of

(*Continued on page* 66)



SUPPLYING WATER for a shifting population

Though the population of Tulsa, Okla., increased less than 1,000 between 1930 and 1940, a shift in the city's development caused a rapid expansion of the southeastern section of the city. The water mains serving this area were not large enough to meet its needs after the section became built up and distribution pressures dropped as low as ½ lb. per sq. in. for short periods at one location during peak loads.

Two years ago the 2,500,000-gal. steel reservoir shown above was installed at the highest elevation in this area. It is of proper proportions to ride on the system without need of additional pumping equipment, is sufficiently high to provide a minimum of 20 lbs. pressure, and provides a 1,500,000-gal. reserve for fire service.

Adequate storage facilities provide an economical means of supplying the water needs of a shifting population whether motivated by more desirable living conditions, the expansion of industrial production, or the development of complete new facilities. Where natural elevations of sufficient height are not available or higher minimum pressures are required, elevated tanks are used to obtain the desired head.

STORAGE TANKS—Flat-bottom tanks with cone or special roofs for the storage of oil, water or other liquids. TECHNICAL BULLETIN NUMBER 11 contains complete table of standard barrel capacities for oil tanks, standard gallon capacities for water tanks and A.P.I. designs.

ELEVATED STEEL TANKS — Provide gravity water pressure for general service or fire protection. Bulletin entitled FIRE PROTECTION contains general data and tables of standard capacities from 5,000 to 500,000 gals. for ellipsoidal-bottom and hemispherical-bottom types. Bulletin entitled RADIAL-CONE BOTTOM ELEVATED WATER TANKS contains illustrations of tubular and structural column radial-cone tanks in large capacities. This design used for capacities of 500,000 to 2,000,000 gals. for municipal service with 25 to 35 ft. range in head.

HORTONSPHERES—Built in capacities of 1,000 to 20,000 bbls. to store volatile liquids under 20 to 100 or more lbs. per sq. in. pressure. Also from 20 to 65 ft. in diam. to store gases under 20 to 100 or more lbs. per sq. in. pressure.

HORTONSPHEROIDS — Smooth spheroids built in capacities of 2,500 to 40,000 bbls. to store volatile liquids under pressures up to 35 lbs. per sq. in. Noded spheroids built in capacities of 20,000 to 120,000 bbls. for 2½ to 20 lbs. per sq. in. Bulletin entitled THE HORTONSPHEROID contains general information on both types.

HEMISPHEROIDS — Built in capacities up to 20,000 bbls. for storing liquids at low pressures.

PRESSURE VESSELS — Refinery towers or plain pressure vessels built at Birmingham to Paragraph U-68 of ASME Code with joints x-rayed and stress-relieved and Paragraph U-69 or API-ASME vessels at other plants.

WIGGINS PONTOON ROOFS — Installed on new or existing oil tanks. Ride directly on surface of liquid in tank. Used to reduce fire hazard and evaporation loss on working tanks. Bulletin entitled THE WIGGINS PONTOON ROOF contains complete details.

WIGGINS BREATHER ROOFS — Prevents evaporation loss from standing oil storage tanks kept full or nearly full. Installed on new or existing tanks. Recommended for 60 ft. diam. or larger. Bulletin describes construction and operation.

WIGGINS BALLOON ROOFS — Flexible roof like Breather except with greater capacity. Used for smaller sizes, slow working tanks and to connect to other tanks. Complete description in Bulletin entitled WIGGINS BREATHER ROOF AND WIGGINS BALLOON ROOF.

STEEL PIPE—Welded steel pipe 36-in. diam. or larger in standard lengths up to 60 ft. Penstocks, hydraulic pipe lines and tunnel liners built to special designs.

SURGE TANKS — Johnson differential surge tanks, described in booklet sent on request, or simple surge tanks.

CHICAGO BRIDGE & IRON COMPANY

Birmingham	1530 North Fiftieth Street	New York	3313-165 Broadway Bldg.	Philadelphia	1619-1700 Walnut Street Bldg.
Houston	5614 Clinton Drive	Cleveland	2216 Guildhall Bldg.	Detroit	1510 Lafayette Bldg.
Tulsa	1611 Hunt Bldg.	Chicago	2106 McCormick Bldg.	Havana	402 Edificio Abreu
Greenville	York Street	San Francisco	1040 Rialto Bldg.	Washington	632 Washington Bldg.

B-929

Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PA.

New Methods and Equipment

Large Double Ribbon Type Mixer

Designed for use in mixing automobile body insulating material, a large double ribbon type mixer has been completed by H. K. Porter Company, Pittsburgh, Pa., for an automotive manufacturer. The new mixer has a total operating capacity of 2,000 gallons, with a mixing bowl 6 feet wide by 9 feet 2 inches long by 6 feet 6 inches high. The tank, fabricated from plain steel, is driven from both ends by machine cut gears riding on anti-friction bearings. Motor drive is mounted on the same base as the machine itself, thus eliminating the danger of misalignment. Fast and efficient mixing is accomplished by means of spiral ribbons arranged to create a positive folding action on the material inside the cylinder. Contamination of materials being mixed is prevented by special end seals.

Camouflage Paint Developments

Facts now known to American camoufleurs, gained from actual observation and experience, clearly show that daylight concealment is an art and science.

Modern chemistry has recently solved this problem through an infra-red (heat) deflecting paint. One such development which appears to be proved and in accepted use, is a series of dark colored heat-deflecting paints, said to defy the infra-red lens, while maintaining lower inside temperatures of sun-exposed objects whose surfaces are painted with them. Made by Premier Oil & Lead Works, Los Angeles, Cal. They are said to be permanent, durable paints.

Cement for Laying Insulating Fire Brick

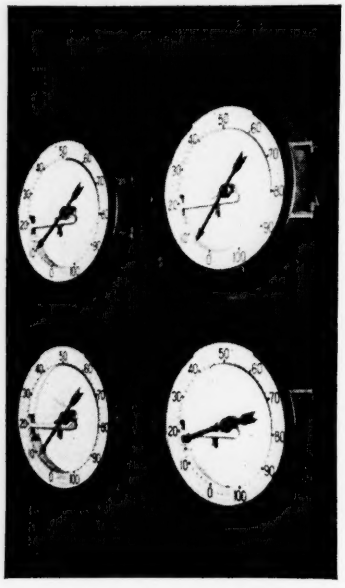
The Building Materials Division of Armstrong Cork Company, Lancaster, Pa., has developed a new cement known as Armstrong's No. 2500 Cement, designed especially for use in laying Armstrong's A-16, A-20 and A-25 Insulating Fire Brick. It is declared to provide improved workability, greater coverage, a high degree of cold bonding strength and hot bonding strength, without the bonding characteristics of an "Air Set" cement. It is particularly suitable for use directly exposed to furnace temperatures over 1800 degrees Fahrenheit.

New Prefabricated Concrete Construction System

W. P. Witherow, Jr., president of the Cementstone Company, Pittsburgh, Pa., announces a revolutionary prefabricated concrete construction system designed to smash records in high speed defense plant construction. The system is described as utilizing a minimum of vital materials and involving specially engineered shapes constituting columns, girders, long or short span floor or roof slabs, and wall panels. These individual units, which fit together to form a building, are made of pre-cast and reinforced concrete of great durability and strength, one-foot square columns alone having been tested to a load of over 534,000 pounds. With a minimum of effort and expense, plants thus erected may be made larger or smaller, or even dismantled and moved to keep pace with changing conditions.

Smoke Density Indicating and Recording Equipment

By means of smoke density indicating and recording equipment, illustrated and described in a catalog recently issued by Leeds & Northrup Company, Philadelphia, Pa., boiler operators in many industrial and public utility power plants are following smoke abatement schedules more easily, it is declared, and often with improvement of boiler efficiency. This equipment samples smoke automatically



Smoke Density Recording Equipment.

at the stack, measures its density, and continuously brings the results to the firing aisles so that operators may see conditions at a glance and make prompt corrections. They are guided by an indicating recorder with an unusually easy-to-read dial, on which a large arrow continuously shows density, while a pen records on a 24-hour circular chart. Or a model may be supplied which indicates somewhat less boldly, but draws a more detailed record on a strip-chart, replenished only once in six weeks.

New Carbide Light

National Carbide Corporation, New York, announce a new floodlight, NC-200 model, having two 8,000 candle-power lights on swing joints, allowing independent directional control or concentration of both lights as needed.

Improved Crescent Truck

For plants requiring lift truck facilities, an improved type "LDLF" Crescent truck, with exclusive features, is offered by Crescent Truck Company of Lebanon, Pa. This model, designed for use with 7-inch hand skids, will replace from 3 to 5 hand truckers, it is declared, at an operating cost of one-third the daily wage of a laborer. It is operated by running the platform under the skid, and several pumps on the foot pedal will raise the skid a full three inches. The load is lowered by means of a release lever on the dash, controlled by hydraulic check.

Blackout and Camouflage Paints

The Paint Division of Pittsburgh Plate Glass Company, Pittsburgh, Pa., has developed a complete line of "blackout and camouflage" paints, according to a recent announcement, which are designed for domestic and commercial use in areas subject to possible air raids. When applied to windows, they obscure interior illumination, and are equally effective for use on skylights and other glazed openings. The paints have been developed in four principal colors—black, smoke gray, earth drab, and neutral brick.

Improved 125-Ton Straightening Press

An improved 125-ton straightening press for gun barrels has been developed by The Watson-Stillman Co., Roselle, N. J. It is also suitable for straightening shafting, forgings, etc. The unit is of the manually movable press type. Advance speed is 87 inches per minute, pressing speed 13½ inches per minute, and return speed, 78 inches per minute. The entire unit weighs approximately 7,500 pounds, is 10 inches high, and requires 14-foot by 5-foot floor space. It is powered by a radial pump with servo-motor control delivering 36 GPM at 200 pounds per square inch and 5.5 GPM at 2,650 pounds per square inch, driven by a 7½-horsepower motor.

Carey Blackout Materials

Anticipating the possibility of air raids on America, the Philip Carey Manufacturing Company, Lockland, Cincinnati, Ohio, has made an extensive study of problems involved and has developed a blackout material to meet various requirements. Experience has shown that, to be fully effective, two problems must be considered: the prevention of reflected outside light on windows, and protection from flying glass. In the production of its blackout materials, the Carey Company has done extensive research work to meet all requirements.

Two First Aid Products

Mine Safety Appliance Company, Pittsburgh, Pa., has added two first aid items to their lines—a folding stretcher outfit and a wood traction splint. The first is a compact unit suitable for fire trucks, police cars and commercial trucks.

The tractoin splint is designed for supporting leg or arm fractures according to methods prescribed by American Red Cross; easy to pack and carry, and quickly adjustable to the patient.

War Credit for War Industries

With ample capital funds and a background of 77 years' experience with manufacturing, First and Merchants considers that its first duty these days is to make way for war credit.

Are you expanding to take care of war production? Is it necessary to seek a new location? Is financing essential materials your problem? Get in touch with First and Merchants, an outstanding commercial bank in the South. When we know your problem, we can be helpful to you.

FIRST AND MERCHANTS
National Bank of Richmond

John M. Miller, Jr., Chairman of the Board • H. Hiter Harris, President

CAPITAL AND SURPLUS SIX MILLION DOLLARS

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NATURAL GAS

A fuel whose value has been proven by years of use in a most diversified line of industrial applications.

Natural gas has created the possibility of effortless comfort by the facility, and economy with which it fits into the home.

SOUTHERN NATURAL GAS COMPANY

Watts Building **Birmingham, Ala.**

Oil Dermatitis Preventive

Industrial dermatitis, or skin disorders caused by bacterial or fungus infestations in cutting oils, drawing oils, core oils and similar compounds, may be prevented, it is claimed, by the addition of an odorless, water soluble germicide in tablet form. Tablets are dissolved at the rate of one tablet per gallon of emulsified oil base or compound, and this solution is added to the cutting oil base before dilution with water. Tablets are dissolved in alcohol before adding to paraffin base oil. The product is also claimed to prevent odors and decomposition of oils by preventing or retarding bacterial or fungus growth. Packed 100 to a box, the tablets are made by the Natriphene Company, Book Building, Detroit, Mich.

New Methods and Equipment

Hollow Concrete Masonry Walls for Sabotage and Bombing Protection

Walls of hollow concrete masonry units, with sand-filled cores, are cited as effective protection against bomb splinters or bullets. They have the additional advantage of conserving cloth commonly used for sand bags, of which there is now a critical shortage.

Based on actual war experience in England, the conclusion has been reached that concrete masonry walls, with sand-filled cores, meet all requirements for protective installations, and to a great extent have replaced sand bag walls because it was found that cloth sacks rotted within a few months, causing complete collapse of many barriers. Electric utility companies in various sections of the country have built concrete masonry walls around transformers and substations, while factories performing essential war work have installed similar baffle walls around certain areas, and many industrial organizations are ready for such installations.

The construction of masonry walls, either with or without mortar, requires concrete footings to insure stability. These footings may be of plain concrete, at least 8 inches deep and 16 to 20 inches wide, according to the Portland Cement Association of Chicago, Ill. Where the underlying soil is fairly stable, the footings may be built of 12-inch concrete masonry units with the cores filled with a cement mortar made with one part of Portland cement and three to four parts of sand. The 12-inch units may be used without mortar above grade for a wall as high as 14 feet which would require 21 courses. Pilaster construction is desirable at corners and at intervals for any wall 30 feet or more in length.

Twelve-inch hollow concrete masonry units without mortar, protecting basement windows of building used as bomb shelter at Radcliff College, Cambridge, Mass.

For Extinguishing Magnesium Fires

For easily and quickly extinguishing magnesium fires, the Pulmosan Safety Equipment Corporation, Brooklyn, N. Y., manufacturers of industrial safety equipment, has developed Magout Powder, which is claimed to be effective in instantly smothering fires caused by magnesium shavings in machine shops, or by magnesium incendiary bombs. It is a non-absorbant, finely pulverized dry powder, safe to handle and easy to use, available either in bulk quantities or in handy instant-action tubes for sprinkling on fires.

To Help Solve Camouflage Problems

If and when camouflage becomes necessary, involving the covering of windows and skylights to shut out daylight, a Skybrite product known as Skyco No Glare is offered by The Skybrite Company of Cleveland, Ohio. It is easily applied to glass and is declared to admit 94 per cent of light, while reducing heat 15 per cent and shutting out glare, thus contributing to the workers' comfort. Furnished in sky blue and light green colors which lend themselves well to camouflage.

Industrial News

Caterpillar Tractor Personnel Changes

President L. B. Neumiller of Caterpillar Tractor Co., Peoria, Ill., announces the appointment of E. W. Jackson as Assistant to the President and the promotion of D. O. Nash to succeed Mr. Jackson as General Service Manager. Mr. Jackson is a native of Maryland and a graduate of Johns Hopkins University. In 1929, when "Caterpillar" Diesel engines were in an experimental stage, he was with the "Caterpillar" Research Laboratory and in 1937 became General Service Manager. Mr. Nash is a graduate of Oregon State University and joined "Caterpillar" in 1937.

Doran Elected Vice President of Ryerson

Fred S. Doran has been elected Vice President of Joseph T. Ryerson & Son, Inc., Chicago, Ill. Starting in 1905 as an office boy, Mr. Doran later entered the Sales Department and represented the company in Wisconsin and southern Minnesota territories. In 1927 he became manager of the Ryerson Cleveland Steel Service plant and later was transferred to the general offices in Detroit to direct purchases for ten Ryerson plants.

More Power for Defense Plants in Southwest

A record installation of capacitors will soon permit a power pool of several power companies centering around Houston, Texas, to deliver from 35,000 to 50,000 kw. additional power to important defense loads in this area, chief of which is a new magnesium plant at Freeport. The new equipment is being supplied by General Electric Company through the Defense Plant Corporation.

Clarke-Harrison Appoints Wallack

Clarke-Harrison, Inc., Management Engineers, Philadelphia, Pa., announce the appointment of Louis R. Wallack in charge of industrial relations. Mr. Wallack brings to the work an experience of twenty years.

American Society of Tool Engineers

The American Society of Tool Engineers at its annual convention in St. Louis, elected the following officers:

President, Otto W. Winter, Vice-President, Republic Drill and Tool Co., Chicago; First Vice-President, Ray H. Morris, Vice-President, Hardinge Bros., Elmira, N. Y.; Second Vice-President, D. D. Burnside, Superintendent, American Stove Company, St. Louis; Secretary, Clyde L. Hause, Gorham Tool Co., Detroit; Treasurer, Frank R. Crone, Lincoln Motor Co., Detroit; Executive Secretary, Adrian L. Potter, Springfield, Mass.

The Board decided not to hold the Machine & Tool Progress Exhibition in 1943 because of the need of all available tools. Similar action was taken last year about this year's show.

Organized March 28, 1932, with a charter membership of 33, the Society now has 54 chapters covering practically every industrial area in the United States and Canada. The total membership is 10,142.

Increasing Diesel Engine Production

President B. B. Williams of the Cooper-Bessemer Corporation, Mount Vernon, Ohio, announces that the corporation is erecting new buildings and installing new equipment at its plant at Grove City, Pa., to practically double its output of Diesel engines. Principal items involved in the project is the construction of two new buildings which will release space, heretofore used for storage, that will be devoted to Diesel engine production.

Barney Elected Worthington Vice President

Charles Neal Barney of Scarsdale, N. Y., has been elected a vice president of the Worthington Pump and Machinery Corporation, Harrison, N. J., according to announcement by the corporation. Mr. Barney has been a member of the Worthington organization since 1918, and has been treasurer since 1931, as well as the head of the corporation's legal department. Formerly a practicing lawyer in Massachusetts, he was a lecturer at Northeastern Law School and Boston University Law School, and author of the law text "Equity and Its Remedies."

Special Steel for Shells

The Research Division of the American Rolling Mill Co., Middletown, Ohio, in cooperation with government ordnance and other private research organizations, has developed a special steel to be used in the manufacture of shell casings. Armco has made available certain buildings and equipment to another company which will manufacture the casings. It is expected that operations will soon be started.

Truscon Steel Appointments

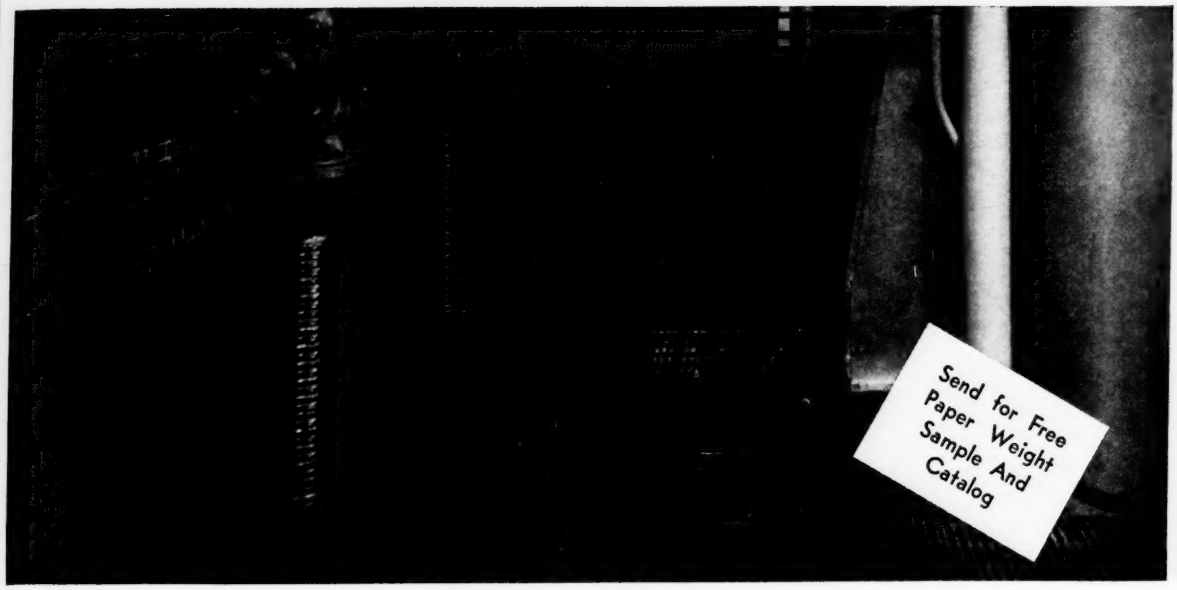
The Truscon Steel Company, Youngstown, Ohio, subsidiary of Republic Steel Corporation, announces the appointment of W. V. Peters as vice president and director to succeed Kenneth D. Mann, who leaves Truscon to serve in U. S. Army.

C. B. McGehee has been named General Manager of Sales of Truscon. Holding an engineering degree from Georgia School of Technology, Mr. McGehee joined Truscon in 1927 becoming later district sales manager at Atlanta. Following various promotions he was made, in 1940, manager of sales, Southern area, holding that position until his present promotion.

Increase in Sales of Tin Substitute

According to Wylie Brown, president of Phelps-Dodge Copper Products Corporation, New York City, American manufacturers of PMG Hardener, substantial increase in the sales of that product have been recorded. PMG Hardener is used as a substitute for tin in the production of bronze castings, some of which in the past have contained as much as ten per cent tin. PMG was developed by the Vickers-Armstrong Company in England and is manufactured and sold exclusively in the United States by the Phelps-Dodge Copper Products Corporation. With the all-out effort to conserve tin, according to Mr. Brown, the uses of this hardener are being expanded.

(*Continued on page 52*)



GARY-WELDED-GRATING

Square Edge Bars Assures Safe Footing—Hexagonal Cross Bars For Neat Appearance — Strictly One-Piece Construction — Self Cleaning — Engineered For Your Requirements.

STANDARD STEEL SPRING COMPANY

Open Steel Floor Grating Division — **2700 East Fifth Avenue, Gary, Indiana**

IF you are interested in purchasing land on the East Coast of Florida for a home, grove, farming or grazing, Write—

MODEL LAND COMPANY

Flagler System — **St. Augustine, Florida**

ELBERTON, GEORGIA (1940 population 6,187)
seat of
ELBERT COUNTY (1940 population 19,622)

To new industries City and County taxes are waived for five years. Ample rail, motor truck and passenger bus transportation. Ideal climate.

Elberton needs a garment factory employing between 150 and 200 white women.

Address, Chamber of Commerce, Elberton, Ga.

We have helped

many businesses that have brought us their financial problems.

Correspondence invited.

BALTIMORE COMMERCIAL BANK

GWYNN CROWTHER, *President*

BALTIMORE, MARYLAND

Member Federal Reserve System
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PLANT SITES
in the Seaboard Southeast

In the six southeastern states served by the Seaboard Air Line Railway there are many excellent plant locations suitable for a wide variety of enterprises.

Assets of prime importance include an abundance of raw materials, cheap power, good labor conditions, excellent transportation facilities, quick access to markets, and last but not least, a friendly people who are sympathetic towards industry and its problems.

Detailed reports will be furnished on specific sites upon request. To interested prospects we offer all the benefits of an experienced plant location service without obligation or cost.

WARREN T. WHITE, GENERAL INDUSTRIAL AGENT
SEABOARD AIR LINE RAILWAY, NORFOLK, VA.

Industrial Department

SEABOARD
AIR LINE RAILWAY

THE BALTIMORE AND OHIO RAILROAD CO.

SUMMARY OF ANNUAL REPORT FOR YEAR 1941

The annual report of the President and Directors of the operations of the Company for the year 1941 is being mailed to its shareholders. The report shows that the gross earnings for the year were the largest for any year since 1929.

RESULTS OF OPERATIONS

The audited income account of the Company in comparison with 1940 is summarized as follows:

	1941	1940	1941 Increase Over 1940
Railway operating revenues	$227,503,021.56	$179,175,464.63	$48,327,556.93
Railway operating expenses	160,918,417.51	132,600,798.97	28,317,618.54
Net railway operating revenue	$ 66,584,604.05	$ 46,574,665.66	$20,009,938.39
Railway tax accruals	15,780,105.71	11,645,694.99	4,134,410.72
Railway operating income	$ 50,804,498.34	$ 34,928,970.67	$15,875,527.67
Equipment and joint facility rents—Net debit	4,507,373.81	4,310,439.38	196,934.43
Net railway operating income	$ 46,297,124.53	$ 30,618,531.29	$15,678,593.24
Other income	8,306,748.01	8,244,714.20	62,033.81
Total income	$ 54,603,872.54	$ 38,863,245.49	$15,740,627.05
Miscellaneous deductions	2,004,180.92	1,688,203.37	315,977.55
Income available for interest and other charges	$ 52,599,691.62	$ 37,175,042.12	$15,424,649.50
Fixed interest and other fixed charges	20,141,033.67	20,265,210.33	*124,176.66*
Income available for other purposes	$ 32,458,657.95	$ 16,909,831.79	$15,548,826.16
Contingent interest charges	11,366,775.00	11,360,335.00	6,440.00
Net audited income	$ 21,091,882.95	$ 5,549,496.79	$15,542,386.16

In this statement there are included as deductions before arriving at net audited income, the full amount of fixed and contingent interest on the total interest bearing indebtedness of the Company accruing within the periods shown.

AVAILABLE INCOME AND APPLICATION UNDER MODIFICATION PLAN

The statement shows that for the year 1941 there was $52,599,691.62 of audited income available for the payment of interest and other charges. Under the Plan for Modification of Interest Charges and Maturities of August 15, 1938, as incorporated in the supplemental indentures of January 1, 1940 to the affected obligations, an adjustment is made in this amount for cash transactions pertaining to the income of former years. This increased the amount of income available for the payment of interest and other charges to $52,644,114.86. From this is first deducted $1,057,688.32 for rent for leased roads and equipment and $19,083,345.35 for interest remaining fixed under the Plan, or a total of $20,141,033.67, leaving remaining available net income of $32,503,081.19. From this available net income the Board of Directors in the exercise of their delegated discretion appropriated $5,690,337.39 for capital fund to be applied to or to reimburse the Company's treasury for capital expenditures. They further appropriated $22,073,407.69 providing for the payment of all accumulated and unpaid contingent interest accrued to December 31, 1941. From the then remaining available net income, 75%, or $3,554,502.08, was appropriated for sinking fund, leaving available balance of $1,184,834.03 for other corporate purposes. (The Plan provides that from 1939 to 1943, 75%, and thereafter 50%, of the Available Net income remaining after the payment of all contingent interest charges, is to be set aside in the Sinking Fund until $100,000,000 par value of secured obligations of the Company is retired.)

The payment of contingent interest authorized by the Board of Directors will be made against the surrender of contingent interest coupons of May 1, 1942, appurtenant to all bond issues affected by the Plan, and the supplemental indentures, relating thereto and to facilitate collection the coupons of May 1, 1942, may be presented for payment on or after April 10, 1942.

* * * * * *

There was a net increase of $3,788,010.17 in outstanding interest bearing obligations incurred during the year, due principally to the issue of equipment trust obligations.

* * * * * *

The total expenditures during the year for additions and betterments to road property aggregated $3,773,277.77.

During the year four new and additional Diesel passenger locomotives were acquired and placed in service, and to provide adequately for the transportation of materials so vital to National Defense, 4,763 new and additional freight cars were acquired, consisting of 1,563 steel box cars, 2,050 steel gondolas and 1,150 steel hopper cars.

The Company also acquired and placed in service four passenger-train cars, eight barges and scows, twenty-five units of automotive equipment and four units of work equipment. The Company built in its own shops fifty new caboose cars and rebuilt and modernized five locomotives, two passenger-train cars, thirty-six freight-train cars, one unit of floating equipment and one unit of work equipment. The total cost of the equipment acquired, together with additions and betterments to existing equipment, aggregated $17,080,698.55. During the same period there were retired for obsolescence and other causes, eleven steam locomotives, three passenger-train cars, 205 freight-train cars, and thirty-six units of miscellaneous equipment, having a total book value of $1,065,351.44, which deducted from the total cost of equipment installed during the year makes a net increase in capital account of equipment of $16,015,347.11.

In addition to the cars delivered and placed in service during the year, 687 additional cars were under contract and have since been delivered. The Company has authorized the acquisition of the following new and additional equipment for 1942 delivery, viz.: two multiple-unit Diesel passenger locomotives, six multiple-unit Diesel freight locomotives, 1,000 steel box cars and 1,000 steel hopper cars at an aggregate cost of approximately $9,500,000.

* * * * * *

Based on 1941 volume of traffic, it is estimated that on an annual basis the increases in rates, fares and charges authorized by the Interstate Commerce Commission, will produce $10,500,000 additional revenues, as compared with the increase recommended by the Mediation Board appointed by the President of the United States, of $14,250,000 in wages and taxes incidental thereto, and nothing for increases in cost of materials and supplies and other taxes.

* * * * * *

Railway tax accruals in 1941 aggregated $15,780,105.71, to which should be added miscellaneous tax accruals of $433,577.45, making total taxes for the year $16,213,683.16, an increase over 1940 of $4,432,316.98, or 37.62%. Of railway tax accruals, $6,471,098 was levied by States and local taxing agencies, and the remainder, or $9,309,008, was taxes due the United States, of which $6,194,708 were pay-roll taxes for unemployment insurance and retirement, and $2,808,192 income taxes, the remainder being of miscellaneous character. Railway tax accruals in 1941 absorbed approximately seven cents of each dollar of total operating revenues and approximately twenty-four cents of every dollar of net operating revenue against which these taxes are a first charge.

R. B. WHITE, President.

TRADE LITERATURE

MANUFACTURE OF PAPER AND BOARD—
Booklet—"Paper and Board Manufacture," illustrated, citing that most of the paper and board made in North America is manufactured on the Fourdrinier machine invented more than 100 years ago, with a brief reference to International Paper Company's eight Southern mills, with an aggregate capacity of over 4,300 tons of kraft board and paper.
International Paper Company, 220 East 42nd St., New York, N. Y.

"How Worthington Serves Industry"—This is the title of booklet issued by the Worthington Pump and Machinery Corporation, Harrison, N. J., presenting a brief outline intended to convey quickly a general view of Worthington's "comprehensive service to industry," with illustrations showing varied applications of Worthington equipment.

HOW TO TACKLE WAR BUSINESS—
Book—"How One Company Tackles the War Production Problem," presenting a case history of results when faced with the loss of more than half its business by obtaining prime contracts and subcontracts.
Lyon Metal Products, Inc., 3064 Clark St., Aurora, Ill.

TANKS, WELDED PLATE CONSTRUCTION, ETC.
Handbook—dealing with tanks for all purposes, welded plate construction, and products of steel, nickel, lead, stainless alloy or clad steel; available to responsible individuals writing on company letterheads.
Buffalo Tank Corporation, Dunellen, N. J., and Buffalo, N. Y.

CUTTING MACHINING COSTS—
Guide Book—"A Chalk Talk on 40 Different Ways to Cut Machining Costs," prepared especially for machinists operating DOALL Contour Sawing Machines.
Continental Machines, Inc., 1301 Washington Avenue, South, Minneapolis, Minn.

IDEAL COMMUTATOR DRESSER COMPANY TOOLS—
Folder—illustrating electric etchers and markers, balancing ways, wheel dresser, cleaners and other Ideal equipment;
Folder—illustrating and describing Ideal time-saving tools.
Ideal Commutator Dresser Company, 1279 Park Avenue, Sycamore, Ill.

UNIT PACKAGING—
Booklet—devoted to unit packaging, involving inter-plant movement of materials, parts, sub-assemblies, with minimum loss in transit, and saving in packing materials, plus speed.
Clark Tructractor, Division of Clark Equipment Co., Battle Creek, Mich.

"A Course in Modern Timber Engineering"—This is the title of a 119-page textbook by J. C. Hansen, C. E., Associate Professor of Civil Engineering at A. & M. College of Texas. Published by the Southern Pine Association, New Orleans, La., is available free. In addition to sketches of design problems, the book presents examples of actual design calculations, and is so written that it may be used as a text book in schools and colleges besides being of help to the practising engineer.

COAL PREPARATION AND MATERIAL HANDLING EQUIPMENT—
Booklet No. 142—52 pages, "Prepare for Profits," presenting data on many of the nation's larger coal producing plants, as well as technical discussion of scientific and up-to-date preparation equipment.
McNally Pittsburgh Manufacturing Corporation, 307 N. Michigan Avenue, Chicago, Ill.

LIQUID CONTROL SYSTEMS—
Circular—"To Help Win the War of Production," illustrating and describing Bowser equipment for handling liquids;
Booklet—"Flow Indicating Devices," illustrating and describing devices to "show what goes on in the pipe line."
S. F. Bowser & Co., Inc., Fort Wayne, Ind.

SELECTING COLORS FOR ROOM DECORATION—
Manual—"Color Keys to Decoration," 36 pages, printed in four colors and containing 111 colorful rooms and settings; designed to simplify the problem of selecting colors for room decoration.
United States Gypsum Company, Chicago, Ill.

(*Continued on page* 54)

Industrial News

(Continued from page 50)

Buchanan Made Baltimore Territorial Manager by Black & Decker

Grant M. Buchanan has been appointed district engineer for the Baltimore territory by the Black & Decker Manufacturing Co., Towson, Md., in charge of portable electric tool sales. His territory includes Maryland, District of Columbia, Virginia and part of West Virginia. Succeeding Curtis C. Watts, who has resigned his position with the company, Mr. Buchanan brings to his new position the background of a long and well-rounded experience with the Black & Decker organization, having started in the engineering department in 1920, where he did much of the design work on many of the company's products. For years he has been responsible for technical and practical training of salesmen and has collaborated in many of the company's technical presentations.

Artificial Leather Shades Help Black-out Defense Plants

Designed originally to keep light from photographic dark rooms and technical laboratories, black artificial leather shades with sheet metal fixtures are now being used to help black-out defense plants, institutions and buildings, according to Armco News Service, Middletown, Ohio.

An A-1-C priority enabled Higgin Products, Inc., Newport, Ky., to obtain the required 18 tons of Armco galvanized mill-bonderized sheets required through the Cincinnati Steel Products Company.

Rust Engineering Company Contracts

Industrial construction contracts completed by Rust Engineering Company of Pittsburgh, Pa., in 1941, amounted to $20,000,000, including more than half of 205 new contracts signed during the year, according to company officials. The major part of the company's undertakings covered defense projects for the Government, the larger of these ranging from $1,000,000 to $7,000,000.

In this class were: design and construction of army shell forging and machining plant; power generating plant; naval ordnance plant; multiple-story concrete storehouse; complete manufacturing plant; machine shop and assembly buildings, and shipyard buildings. Government projects undertaken at less than $1,000,000 include defense housing projects at Sheffield and Gadsden, both in Alabama.

For private industry the Rust Company undertook the following contracts, valued between $500,000 and $2,000,000: design and construction of a plant for the Florida Pulp and Paper Company, Pensacola, Fla.; blast furnace and stove foundations at Gadsden, Ala., for Republic Steel Corporation; power plant expansion for Republic Steel at Buffalo, N. Y., and power plant for Humble Oil and Refining Company at Houston, Tex.

Other major industrial work contracted by the Company at more than $200,000 includes: coal handling system at Cabin Creek, W. Va., for Appalachian Power Company; Atlanta Combination Building at Atlanta, Ga., for Westinghouse Electric and Manufacturing Company and warehouse alterations and construction of new conveyor bridge at Nitro, W. Va., for American Viscose Company.

George M. Shriver

George M. Shriver, senior vice president of the Baltimore and Ohio Railroad, died at the Union Memorial Hospital, Baltimore, on May 11. He is survived by three sons and two daughters.

Mr. Shriver began his career with the Baltimore and Ohio in 1887, and in 1888 became private secretary to Charles F. Mayer, president of the Consolidation Coal Company. Mr. Mayer was elected president of the B. & O. the same year and Mr. Shriver continued with him as private secretary. He was also secretary to the two succeeding B. & O. presidents, John K. Cowen and L. F. Loree. In 1903, he was appointed assistant to the president and continued in that capacity throughout the presidency of Oscar G. Murray, 1904 to 1910. A year after Daniel Willard became president, Mr. Shriver was elected second vice president and placed in charge of the financial and accounting departments.

HOW'S THIS FOR *Stepping-Up* PRODUCTION?

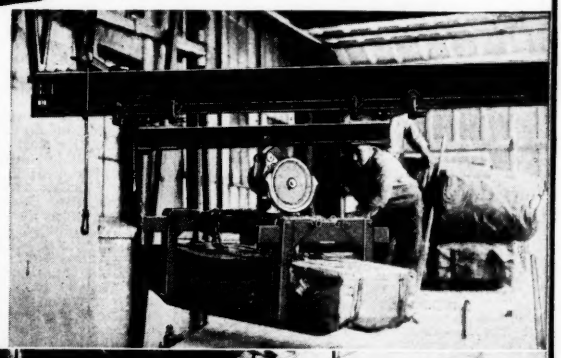
CASE "A"
Reduction of 64% in man hours in one single operation

CASE "B"
Increase from 20 to 80 tons of steel handled in a day

CASE "C"
Production increased 30%

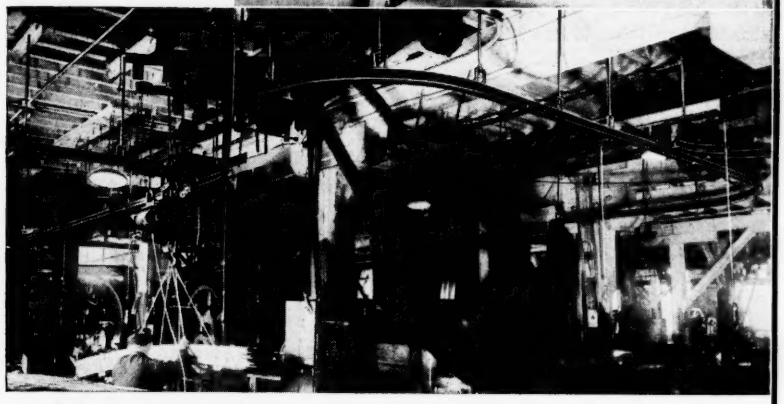
YOU, too, can accelerate your rate of production as rapidly as you release man-power from handling labor. Any mechanical means of lifting and carrying even light loads reduces fatigue and thereby makes possible a greater output per man.

This is only one of many advantages gained with American Monorail Handling Systems . . . to mention a few others — reduction in idle machine time, more compact arrangement of machinery and equipment, congested operating conditions overcome, and waste space converted into profitable space. BUT STEP UP PRODUCTION YOU MUST. Let an American MonoRail engineer show you how it can be done in your plant. American MonoRail equipment is engineered to meet the particular requirements of each problem. There is no delay or shut down during installation.



● Trucks unloaded in 1/3 former time.

● Overhead tracks bring metal to machines in compact arrangements.



THE AMERICAN MONORAIL CO.
13118 ATHENS AVENUE CLEVELAND, OHIO

Trade Literature

(Continued from page 53)

MATERIALS HANDLING EQUIPMENT—Folder—illustrating and describing Lewis-Shepard materials handling equipment.
Lewis-Shepard Sales Corporation, Watertown, Mass.

Chemical Industries' Buyer's Guidebook Number—Published by Tradepress Publishing Corporation, 522 5th Avenue, New York, the 17th Annual Revision (1941-1942) of the Chemical Industries' Buyer's Guidebook Number has been issued. In the latest revision, this well known purchasing "bible" of the chemical producing and chemical consuming industries has been expanded by the addition of a section on all types of equipment, apparatus, containers and packaging and labeling machinery. The 17th Edition also contains a new technical section, supplying engineering data for easy reference.

RYERSON STEEL STOCK LIST—Catalog—data book marking the 100th anniversary of Ryerson steel service to American industry, 268 pages listing more than 11,000 different kinds, sizes and shapes of steel bars, shapes, plates, sheets, tubing, cold finished, alloy, tool and stainless steels normally carried in stock for immediate shipment, together with a brief history of the Ryerson organization from a small iron store in 1842 to a group of ten large plants today, serving users in all major industrial areas.
Joseph T. Ryerson & Son, Inc., Chicago, Ill.

FORESTS AND THE NATIONAL DEFENSE—Booklet—"Behind The Eagle Stand the Forests," illustrated to show pictorially the part the forest products industries have played in America's preparations for the current war;
Booklet—"More About Lumber and National Defense," dealing with many items on the Critical List which are made of wood or wood products, and presenting information on lumber production and consumption.
Timber Engineering Company, Inc., subsidiary of National Lumber Manufacturers Association and American Forest Products Industries, Inc., Washington, D. C.

GRINDING WHEEL SAFETY—Booklet—"A Primer on Grinding Wheel Safety," illustrated, presenting briefly important facts for the operator.
Norton Company, Worcester, Mass.

Chemical Engineering Catalog 1941-1942—This is the Process Industries' Own Catalog, inaugurated by the American Institute of Chemical Engineers in 1915, and is the 26th annual edition. The publication presents collected, condensed and standardized data on equipment, machinery, laboratory supplies, heavy and fine chemicals and raw materials used in the industries employing chemical process of manufacture. It also contains classified indexes of such equipment and materials, carefully cross-referenced, and a technical and scientific books section, cataloging and briefly describing a practically complete list of books in English on chemical and related subjects. Sections of the volume include the following: Alphabetical Index; Trade Name Index; Equipment and Supplies; Classified Index; Technical Data Section; Manufacturers' Catalogs; Chemicals and Raw Materials; Classified Index of Industrial Chemicals, etc., and a section on Technical and Scientific Books. The book is published by Reinhold Publishing Corporation, 330 West 42nd Street, New York.

Davison's Textile Blue Book—The new 76th year edition of this publication reports in careful detail on more than 8000 textile plants, which are alphabetically arranged by states and names, and in the De Luxe Office Edition are classified by the product of each mill. Containing 1400 pages, the new volume is a guide to the Nation's second largest industry—Textiles—and is a complete register of the entire trade. It is beautifully bound in cloth and gold and contains thumb indexes for quick and easy reference to any section. The De Luxe Office edition, which is priced at $7.50, reports all mills geographically and also separately by trades, while the thin paper Handy Edition, priced at $5.00, contains all information in the office edition, except mill classification by products, and the Buyers' Guide. The book is published by Davison Publishing Company, Ridgewood, N. J.

PHENOLS FROM AMMONIA LIQUOR—Leaflet (Form D-12)—"Vapor-Recirculation Dephenolization Process," describes the process of removing phenols from ammonia liquor in by-product coke plant operation and recovering them at a profit.
Koppers Company, Engineering and Construction Division, Pittsburgh, Pa.

CARE IN HANDLING FIBRE ROPES—Booklet—"Care Saves Rope," 16 pages, illustrated and presenting practical information on handling fibre ropes, including details covering rigging of blocks, chart of sling efficiency and mathematical formulas for figuring rope sizes to any job; also deals with commonly used knots and splices and how to make them, and presents a complete weight and strength chart for all ropes.
American Manufacturing Company, Noble and West Sts., Brooklyn, N. Y.

DIESEL ELECTRIC LOCOMOTIVES—Booklet—100 pages, devoted to Diesel electric locomotives of from 10 to 80 tons for large industrial plants, mines, and main line hauling.
Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.

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CONTRACTORS' SUPPLY DEALERS in every state sell the Fulton line. Specify SHUREDRY and FULTEX Tents, Tarpaulins, and Windbreaks — anything made of canvas. Also Fulco Road Mats and Burlap. If your dealer cannot supply you, ask our nearest plant for catalog
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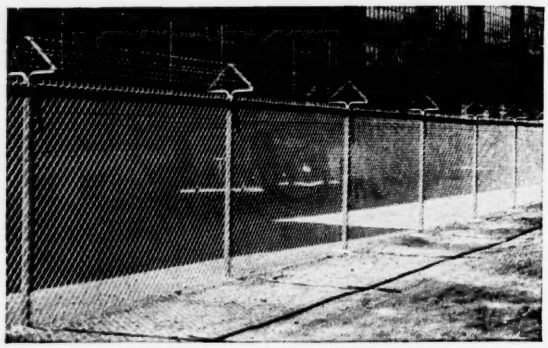
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discourages trespass and invasion
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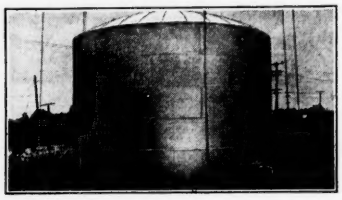
We now manufacture and offer to the trade tanks in all sizes for pressure or gravity work. Also other steel equipment of either



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This applies to field as well as shop built equipment.

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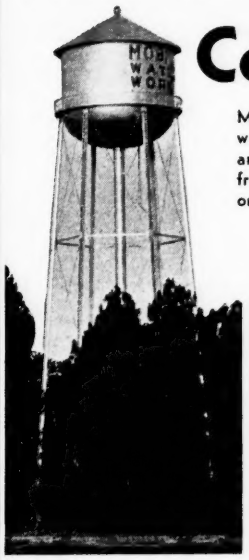

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Many municipal or privately owned water works have had us build tanks and elevated towers to specification from their own engineer's design or ours. Some of the cities served are:

CHARLOTTE, N. C. (Million gallon tank)
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MOBILE, ALA.
McPHERSON, KAN.
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In addition to water tanks we also build tanks for acid, dye, oil, creosote, chemicals, etc., as well as other fabricated products of Quality steel and alloy steel plate. Let us figure on your requirements.

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P. O. Box 5, Palatka, Florida

New Priorities

(*Continued from page 36*)

fining. L-86 Int. #1 clarified exemption paragraph.

Loofa Sponges—M-125 restricts deliveries to orders with A-1-a rating.

Magnesium—M-2-b has been extended indefinitely.

Maintenance and Repair — P-68 Amend. #3 grants A-1-a, A-1-c and A-3 ratings to steel producers and their suppliers; use of form PD-228 is required. P-100 (as amended) Int. #3 exempts uniforms and fire hose from use of preference rating under terms of P-100.

Medical Supplies — L-95 reduces amount of cotton gauze and wood cellulose in sanitary napkins.

Metal Hairpins—L-104 restricts amount of metal in production and regulates length and thickness.

Metal Household Furniture—L-62 Amend. #1 transfers control over "drapery attachments" from L-62 to L-30.

Metal Windows—L-77 Amend. #1 permits manufacture of basement windows and residential-type casements for use in certain rated housing projects.

Metal Working Equipment (Finishes On)—L-108 permits only one coat of primer or sealer to new products, prohibits use of filler and not over two coats of paint may be used.

Mining Machinery and Equipment—P-56-a Amend. #2 permits companies using ratings assigned by P-56-a to make deliveries to South American copper companies operating under P-58, to iron and steel producers under P-68. P-56 Amend. #5 grants use of higher rating to obtain explosives.

Motor Carriers—L-1-a Amend. #5 establishes separate definition for off-the-highway trucks. L-1-a Amend. #6 permits manufacturers to assemble fabricated materials on hand 2-28-42 in knock-down or built-up form to provide 28,000 additional vehicles. L-1-a Amend. #7 rescinds prohibition against tires and tubes on new heavy trucks except for delivery to dealers. P-54 Amend. #3 sets up special definition for off-the-highway trucks. P-54 Ext. #5 extends order till May 31 with A-3 rating. L-1-e stops all production of medium and heavy trucks for civilian use after existing quotas are completed. L-1-f grants producers until May 31 to complete March quotas.

Motor Fuel—L-70 Amend. #1 cuts percentage of gasoline deliveries to service stations and bulk consumers.

Natural Gas—L-31 Amend. to Exhibit A (No. 2) extends delivery restrictions to parts of six midwestern states.

Natural Resins—M-56 restricts use in any calendar quarter to 50% of amount used in corresponding period of 1941. Does not apply to army, navy, lease-lend or specified uses. Needs form PD-339.

Nickel—M-6-c requires segregation of scrap containing more than one-half of one per cent by weight and permits its melting only for authorized uses. Forms PD-149, 150, 151 and 394 are required.

Office Machinery — L-54-a Int. #1 permits makers of typewriters to produce certain parts and sub-assemblies in excess of quotas for completed typewriters. L-54-a Int. #2 clarifies status of privately operated plants controlled by government agency.

Oil Burners—L-74 prohibits manufacture for residential use after May 31 and limits commercial and industrial types to those with A-10 or higher rating.

Osnaburg—L-99 directs cotton mills to convert specified percentages of their looms now producing civilian goods to the production of bag osnaburg and bag sheetings.

Petroleum—P-83 covering material stocked by supply houses for petroleum industry is revoked together with form PD-82a. P-98-a covering other material for petroleum industry also revoked. P-103-a covering material for operation of Standard Oil Co. of N. J., likewise is revoked.

Plumbing and Heating—L-42 Amend. #1 to Sched. #2 exempts certain types of pipe fittings required for shipbuilding. L-42 (as amended) Sched. #4 limits manufacturers of cast iron soil pipe to a single weight. L-42 Sched. #5-a prohibits use of copper or copper base alloy in additional plumbing fixture fittings and trimmings. L-42 Sched. #8 requires simplification of vapor and vacuum heating specialties after June 15. L-42 Sched. #9 limits storage tanks for residential hot water heaters to three sizes after May 15. L-79 freezes all plumbing and heating equipment stocks except retail sales not over $5.00 and A-10 or higher rated orders.

Projects (Defense)—P-19-c Amend. #1, P-19-d Amend. #1 and P-55 Amend. #1 extend preference rating for three months after supplier of materials entering into construction of defense housing project is entitled to apply it.

Protective Helmets—L-105 prohibits production and sale except on order of U. S. government agency or one of the United Nations.

Quinine—M-131 conserves supply and directs distribution. M-131 as amended April 30 prohibits distribution and use except as an anti-malaria agent.

Rail and Rail Joints (Used)—L-88 prohibits disposal of any used rail of relayer, re-roll or scrap grade without authorization but does not prevent railroads from using rail in own tracks.

Railroad Equipment—L-97 prohibits production or delivery of locomotives except according to announced schedule. L-97-a prohibits production or delivery of railroad cars except according to announced schedule. L-97-a-1 cancels all ratings of A-2 or lower on material for car construction.

Refrigerators (Domestic Mechanical)—L-5 Int. #1 excludes from order any refrigerator built for Army, Navy or Maritime Commission for use on ships built or operated by them. L-5 Amend. #2 exempts low temperature mechanical refrigerators for storage of frozen foods or for quick-freezing of foods. L-5-b Amend. #3 permits dealers who want to get out of business to dispose of stock to another dealer. P-126 grants A-1-a, A-3 and A-8 ratings for deliveries of emergency materials for servicing air conditioning and refrigeration equipment. Use form PD-399.

Remodeling Projects (Low-Cost)—P-110 provides A-5 rating for owners who remodel houses to increase living accommodations essential to the war program. Use form PD-406.

Replacement Parts—L-4-b provides for conservation of critical materials in manufacture of storage batteries for passenger cars and light trucks.

Rhodium—M-95 Amend. #1 prohibits use in manufacture of jewelry.

Rotenone—M-133 provides for conservation of supply and directs distribution.

Rough Diamonds—M-109 Amend. #1 postponed filing data for reports to April 30. Use form PD-376.

Rubber—M-124 Amend. #1 permits use of rubber yarn and elastic thread under specific conditions. M-124 Amend. #2 extends indefinitely the original order freezing all stocks of rubber yarn and elastic thread. M-15-b Amend. #3 permits making passenger blow-out shoes and restricts reliners. M-15-b Amend. #9 restricted use of scrap and reclaimed rubber during May continued at 60% of formula based on average monthly use over a base period. M-15-b-1 Amend. #4 provides specifications governing use of rubber as insulation on neutral electric wires. M-15-b-1 Amend. #3 permits making passenger cars capping stock entirely from reclaimed rubber with small quantity of crude for cushion stock. M-119 prohibits use of rubber on containers for packaging certain products.

Sewing Machines—L-98 restricts production of new machines and attachments until June 15 at 75% of 1940 rate.

Shellac—M-106 reduces output of phonograph records and radio transcriptions and freezes 50% of all shellac inventories over 10,000 lbs. and 50% of all imports. Use form PD-334.

Ships (Merchant)—P-7 Int. #1 restricts preference ratings to certain materials and tools.

Steel and Iron—Amend. #3 and Ext. #2 to M-21 restricts deliveries after May 15 to orders with ratings of A-10 or higher. Requires use of forms PD-138 and 139. Form PD-73 is abolished. M-24-b orders segregation of tin plate and tin alloy scrap from other scrap delivered to steel mills.

Sugar—M-55 Int. #2 (as amended) permits canners and packers to obtain quota-exempt sugar needed for first processing of fruits and vegetables. Requirements for second processings are not quota-exempt. M-55-a Amend. #1 lifts shipping zone restrictions for armed forces and Lease-Lend. M-55-h allows receivers of refined sugar to accept 50% of the amount they used or resold in May, 1941.

Sulphur—M-132 permits deliveries in excess of practical minimum working inventory. No restrictions on deliveries or acceptances from primary producer.

Suppliers Inventory Order—L-63, revoking M-67, limits inventories of 19 kinds of supplies. L-63 Exempt. #1 permits warehouses carrying products listed in Schedules "A" and "B" of M-21-b to omit these products from inventory reports required by L-63. L-63 Amend. #1 removes health supplies from list of products subject to control.

(*Continued on page 60*)

Unusually

Heavy Trusses

Electric Arc Welded

Over the Auditorium of the
George Washington Hotel
Jacksonville, Florida

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AT LOWER COST

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For Buildings, Bridges and All Industrial Purposes
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CAREYDUCT is made entirely of asbestos—combines both duct and insulation. Simple slip-joint construction and standardized parts make fitting on job easy and rapid. Cuts easily with saw; no shop work necessary.

CAREYDUCT "hushes" fan noises; reduces "speaking tube" effects. Air velocities may be increased without noise, enabling you to use smaller sizes—a saving in both materials cost and labor.

CAREYDUCT is fireproof; can't rust or rot. Makes a smoother, better-looking, more efficient job. Size for size, it costs LESS than insulated metal duct.

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Dependable Products Since 1873
IN CANADA THE PHILIP CAREY COMPANY LTD. Office and Factory LENNOXVILLE P. Q.

New Plants and Expansions in the South

(*Continued from page 37*)

Delta Canning Co., William C. Black, erect, day labor, a processing plant; 1-story; 50 x 125 ft.; fireproof; built-up roof.

VIRGINIA

GLEN LYN — addition — Appalachian Power Co. let contract to George F. Hazelwood, Cumberland, Md., for structure to accommodate additional boilers and turbo-generators; capacity of new extension, 90,000 K.W., present capacity 30,000 K.W.

ROANOKE—expansion — American Viscose Corp. started work on an expansion program in processing department of its rayon yarn mill.

SOUTH

War Department announces award of a contract to Kelly Springfield Engineering Co., Cumberland, Md., for consultant service, equipment procurement and installation and operation of a manufacturing plant in Maryland. Construction will cost in excess of $5,000,000 and will be supervised by the Washington, D. C., district office of the Corps of Engineers.

War Department announces negotiations of a letter of intention with H. K. Ferguson, Cleveland, Ohio and Oman Construction Co., Nashville, Tennessee, in preparation for a contract for construction of a manufacturing plant in Mississippi, to cost in excess of $5,000,000. Construction will be supervised by Mobile, Ala., office of the Corps of Engineers.

Goodyear Tire & Rubber Co., Akron, Ohio, Kelley-Springfield plant at Cumberland, Md. a subsidiary, has been designated by Defense Plant Corp. and Rubber Reserve Co. to manufacture synthetic rubber.

Celanese Corporation of America, Cumberland, Md., designated as one of the proposed plants to manufacture synthetic rubber by Rubber Reserve Corp. and Defense Plant Corp.; possible location in Texas.

Mississippi Power Co., Gulfport, Miss., estimates that additional facilities required in 1942 and 1943, (including 1941) to serve increasing demand for electricity, would cost $5,058,457; this amount will include steam generating plant with an initial rated installation of 20,000 kw. to be known as Plant Eaton and located at Hattiesburg, design and specifications for this plant prepared by Commonwealth & Southern Corp., Birmingham, Ala.; work in direct charge of H. J. Scholz; 100 miles of 110,000 volt transmission lines, about 30 miles of 44,000 volt lines and about 15 miles of 22,000 volt lines; orders for generating plant equipment let, completion probably in 1944.

Jesse Jones, Secretary of Commerce, announced that Rubber Reserve Co. and Defense Plant Corporation have made contracts and agreements with the principal oil, chemical and rubber manufacturing companies which will bring the annual production of synthetic rubber to more than 700,000 tons. The plants will come into operation over the next 18 months, and possibly be in production by end of 1943. Following companies will participate in the program:

Atlantic Refining Co.
Carbide & Carbon Chemicals Co.
Celanese Corporation of America.
Cities Service Oil Co.
Dow Chemical Co.
E. I. Du Pont de Nemours Co.
Firestone Tire & Rubber Co.
B. F. Goodrich Co.
Goodyear Tire & Rubber Co.
Gulf Oil Co.
Humble Oil Refining Co.
Hycar Chemical Co.
Koppers Co.
Monsanto Chemical Co.
Phillips Petroleum Co.
Pure Oil Co.
Richfield Oil Corp.
Shell Union Oil Corp.
Sinclair Refining Co.
Socony-Vacuum Oil Co., Inc.
Standard Oil Company of Indiana.
Standard Oil Company of New Jersey.
Standard Oil Company of Louisiana.
The Texas Company.
United States Rubber Company.

In addition to the above, there will probably be two or three groups of smaller rubber manufacturers that will be given contracts and supplied with raw materials from some of the above companies with which to manufacture rubber; plants to be built by the rubber companies require less time to construct than facilities for production of raw materials.

Contracts Proposed

ALABAMA

BIRMINGHAM—plant—Rheem Manufacturing Co., home office in Richmond, Calif., purchased old American Radiator Co.'s plant in North Birmingham; expend approximately $500,000 for machinery and plant improvements.

BIRMINGHAM—foundry—Thomas Foundries, Inc., 3800 10th Ave., N., erect foundry building; 70 x 188 ft.; work probably by Marbury & Boriss.

MOBILE—phosphorus plant—TVA, Knoxville, Tenn., will receive $3,000,000 appropriation, for construction of phosphorus and phosphate making plant; will have capacity of several hundred tons of material daily.

ARKANSAS

Plant—Aluminum Company of America, Gulf Bldg., Pittsburgh, Pa., erect $4,000,000 addition to alumina plant near Bauxite.

HOT SPRINGS—mines—American Diamond Corp. will expend $1,000,000 to develop the Pike County diamond mine, it is reported.

STAMPS — plant — Arkansas Power & Light Co., Pine Bluff, purchased practically all of equipment for proposed generating plant; definite site not decided; foundation explorations being made on 2 sites; preference rating granted.

FLORIDA

FORT LAUDERDALE—plane factory — Babcock Aircraft Corp., with plant at DeLand, considering establishing plant at Fort Lauderdale for manufacturing planes.

MIAMI—shipbuilding plant—Miami Shipbuilding Corp., will construct a $1,200,000 shipbuilding plant on P. & O. Steamship property just off Biscayne Blvd.; portion of program calls for the building of 10 boats of steel construction; dredging to start immediately for fill on which plant will be constructed; T. C. Buhler, 1320 Venetian Way, is president of Miami Shipbuilding Corp.

KENTUCKY

PINEVILLE—coal mine—Republic Steel Corp., E. B. Winning, of Uniontown, Pa., general manager of mines for the company, clearing ground for mine to be located at Road Creek on Russell Fork of Big Sandy River; construct tipples, build houses, etc.

LOUISIANA

ALGIERS — buildings — Todd-Johnson Drydocks, Inc., receiving bids, no date set, for construction work; following are prospective estimators, all New Orleans: Lionel F. Favret, 937 Gravier St.; George J. Glover Co., Inc., Whitney Bank Bldg.; J. Gordon Lee, Carondelet Bldg.; R. P. Farnsworth & Co., 1515 S. Salcedo St.; Gervais F. Favrot, Balter Bldg.; Frederick Harris, Inc., Engrs.-Archts., 27 William St., New York.

MISSISSIPPI

GLASS—plant—R. G. Le Tourneau Co. of Mississippi, Ray Gieszl, plant manager, will establish plant at Glass, several miles south of Vicksburg, for manufacture of tractors, road machinery, etc.; work to begin soon.

MISSOURI

KANSAS CITY — expansion — Carnie-Goudie Manufacturing Co., 216 W. 17th St. leased building southeast corner of 18th and Wyandotte Sts.; operate as unit.

ST. LOUIS—addition—Broderick & Bascom Rope Co., 4203 N. Union Ave. let contract to L. O. Stocker Co., Arcade Bldg. for addition to building; brick and steel; 1-story; 60 x 130 ft.; steel sash; composition roof; cost $30,000; W. J. Knight & Co., Engr., Wainwright Bldg.

NORTH CAROLINA

GOLDSBORO—flour mills — Statesville Flour Mills, William H. Sheppard, Jr., Mgr. construct warehouse and 3 grain elevators.

OKLAHOMA

OKLAHOMA CITY—plant—City voted $179,000 bonds for purchase of 480-acre Douglas Aircraft Co. army cargo plane site and removal of oil and gas pipelines therefrom.

SOUTH CAROLINA

COLUMBIA—addition—Pacific Mills plans addition to Richland unit; cost $30,000.

TENNESSEE

MEMPHIS—aircraft plant—Defense Plant Corp. approved project of McDonnel Aircraft Corp., Lambert St. Louis Airfield, St Louis, Mo., to assemble trainer planes at southeast corner of Municipal Airport; bids requested from Memphis contractors on grading, constructing foundation and erection of the building, 327 ft. long by 200 ft. wide; 2½ stories; cost $1,000,000 including installation, building and lease of 50 acres of land.

TEXAS

Pipe line—Stanolind Pipe Line Co., Fair Bldg., Fort Worth, reported, to construct pipe line from Stanolind Oil & Gas Co.'s Spencer Reef lime pool in Ward County to Wink in southwestern Winkler county; 6-in. line, 20 miles with gathering system in Spencer pool.

Shredded iron—Shredded Steel Co., temporary offices, Adolphus Hotel, Dallas, making arrangements for construction of 2 plants to manufacture shredded iron from discarded tin cans; will be located at Dallas and Houston; a third plant will be built later at Kansas City, Kansas; each plant to cost approximately $80,000 and will be under supervision of Frank Shaw, Field Engineer for Defense Plant Corp.; headquarters of Mr. Shaw, Cliff Towers Hotel, Dallas; H. H. Johnson, Mgr., Shredded Steel Co.

Lubricating plant—The Texas Co., Houston, will soon award contract for lubricating oil manufacturing plant in Port Arthur; cost with equipment, $2,500,000.

FORT WORTH—assembly plant—Globe Aircraft Corp., has plans by Wyatt C. Hedrick, 1005 First National Bank Bldg., for assembly plant.

HOUSTON—extension—MacKie and Kamrath, 2017 W. Gray St., will have plans ready for bids in about 3 weeks for extension to plant of General Metals Corp. on Liberty and Homestead Rds.; 50 x 75 ft.; masonry; brick and glass block; cost $18,000.

HOUSTON—plant—Anderson, Clayton Co. acquired building, 400 Bringhurst St. for manufacturing purposes.

McALLEN—processing plant—Lee Akin & Sons Canning Plant, soon let contract for processing plant addition; 2201 Austin St.; 1-story; 100 x 150 ft.; structural clay tile; composition roof; concrete floor slabs.

McALLEN—processing plant—Southwest Products Co., soon let contract for processing plant addition, 2405 Ash St.; 1-story; 100 x 150 ft.; frame and reinforced concrete; concrete floor slabs.

MERKEL—cheese plant — Merkel Co-operative plans starting work in 30 days on 1-story cheese plant; brick and stucco; composition roof; concrete foundation; David S. Castle Co., Archts., 1082½ N. First St., Abilene.

TEXAS CITY—gas line—Pan-American Gas Co., E. R. Turner, V. P., Mellie Esperson Bldg., Houston, will build an 8-in. gas line from Chocolate Bayou Field in Brazoria County to Texas City; estimated cost $250,000; work started on terminals; contract let to Williams Brothers, National Bldg. of Tulsa, Okla.

SOUTH

Mathieson Alkali Works, Inc., 60 E. 42nd St., New York, erect plant for manufacture ammonia and its derivatives.

As In '17——

IT'S LAYNE WATER SYSTEMS FOR THE ARMY, NAVY AND WAR NEEDS

Built under extreme emergency and with amazing speed, thousands of Layne Wells and Pumps are providing billions of gallons of water for war needs—Army Camps, Flying Fields, Naval Stations, Ordnance Works, Chemical Plants, Munition Plants and numerous fortified outposts. Though built with utmost speed, those Layne Water Systems have the strength and ruggedness which will last for years and years.

Layne Well Water Systems, regardless of when, where or how speedily built, are the finest that can be constructed. They will faithfully fulfill their mission until victory comes, whether this year, next year or years from now.

Those men of the Army, Navy and Marine Corps who some day will return to civilian life may well remember that it was Layne who built the well water systems which helped to win the war.

In the meantime, essential civilian water supply service continues. The Layne organization is fulfilling its pledge of "Keep Them Flowing!"

LAYNE & BOWLER, INC.
Memphis, Tenn.

LAYNE
PUMPS & WELL WATER SYSTEMS

Affiliated Companies

Layne-Arkansas Company	Stuttgart, Ark.
Layne-Atlantic Company	Norfolk, Va.
Layne-Bowler New England Corp.	Boston, Mass.
Layne-Central Company	Memphis, Tenn.
Layne-Northern Company	Mishawaka, Ind.
Layne-Louisiana Company	Lake Charles, La.
Layne-New York Company	New York City.
Layne-Northwest Company	Milwaukee, Wis.
Layne-Ohio Company	Columbus, Ohio.
Layne-Texas Company	Houston, Texas
Layne-Western Company	Kansas City, Mo.
Layne-Western Company of Minnesota	Minneapolis, Minn.
International Water Supply, Ltd.	London, Ontario, Can.

WORLD'S LARGEST WATER DEVELOPERS

PRODUCTION *and* PROTECTION

VALVES HYDRANTS *and* PIPE LINE ACCESSORIES

The high quality and dependability of M&H products play an important part maintaining maximum production of war materials in many manufacturing plants. M & H products are equally important for adequate protection of plants and factories against the increased fire hazard of war emergencies. A reserve supply is good insurance.

M & H GATE VALVES are cast iron body, bronze mounted, with double-disc parallel seat or solid wedge top, non-rising stem or outside screw yoke. They come either with flanged or screwed connections. Valves for fire protection lines are marked "WA-FM" to denote approval of both the Underwriters and the Factory mutuals.

M & H FIRE HYDRANTS are revolving head, dry top, bronze mounted. They also are approved by "UA-FM". Entire main valve assembly is removable through barrel without digging. Special Traffic Model is fitted with breakable bolts and stem coupling, designed to break at ground line under impact. Repairs are made simply by renewing bolts and coupling, without shutting off the water.

M & H PRODUCTS INCLUDE

FIRE HYDRANTS	SHEAR GATES
GATE VALVES	MUD VALVES
TAPPING VALVES	VALVE BOXES
WALL CASTINGS	FLAP VALVES
SPECIAL CASTINGS	SLUDGE SHOES
TAPPING SLEEVES	FLANGE AND FLARE FITTINGS
CHECK VALVES	FLANGED FITTINGS
FLOOR STANDS	B & S FITTINGS
EXTENSION STEMS	CUTTING-IN TEES

M&H VALVE AND FITTINGS COMPANY

ANNISTON, ALABAMA

XUM

Rayon's Role in Wartime

(*Continued from page 23*)

for the war effort in that time must be spent on replacements which otherwise would not be necessary.

Contributes to Saving of Wool

Wool, it may be recalled, was among the first of the textiles to be considered in the government list of critical materials. While the public may understand why this is so, it does not seem to realize the extent to which domestic made rayon has been and is being employed to keep the trade supplied with rayon, wool, and worsted types of fabrics for clothing, hats, blankets, flannel, knit and woven underwear, gloves and uniforms and many other woolen articles. Millions of pounds of wool have in consequence been saved by rayon for military needs even before wool was commandeered.

When the government curtailed and then eliminated the use of silk for civilian use, the knitters of silk hosiery and underwear and silk weavers were in a dilemma. The government then called upon the rayon industry to provide yarns suitable for this trade and to allocate and prorate to it a certain percentage of the yarn sizes it could use. The government has also requisitioned some rayon production for our South American neighbors whose former importations from Europe and Japan have, of course, ceased.

In other words the rayon industry is cooperating in every way with the government and is effectively and to an important extent helping to maintain this country's high American standards of living even under war time conditions.

New Priorities

(*Continued from page 56*)

M-67 revoked by L-63.

Tin—M-43 Amend. #2 restricts sales of solder with more than 16% tin content, any tin-bearing babbit metal or tin oxide with certain exceptions. M-43-a Amend. #1 (as amended) revises regulations governing tin usage. Amend. #2 to M-43-a (as amended) removes limitations on uses of tin in making war implements. M-81 Amend. #1 limits packing of condensed soups in tinplate after June 30 to specified kinds. M-104 controls use of tinplate and terneplate as closures for glass containers. M-104 Amend. #1 further restricts manufacture of crown caps for bottles; use form PD-384. M-104 Amend. #2 repeals Amend. #1 and prohibits production of crown caps after May 1.

Toys and Games—L-81 Amend. #1 removes certain colors, oils and chemicals from category of prohibited material.

Track-Laying Tractors—L-53-a drastically curtails output of smaller types.

Tubes—L-76 prohibits production for civilian use of 349 of the 710 types of radio tubes now made.

Tung Oil and Orticica Oil—M-57 as amended April 15 includes orticica oil in original order and restricts use of both oils.

Vitamin "A"—L-40 as amended April 10 permits unrestricted use in foods of vitamin A oils blended prior to February 10.

Waste Paper—M-129 permits manufacturers of paper, paperboard and paper products who consume waste paper to accumulate inventories without restriction.

Wood Pulp—M-93 Int. #1 permits producers and consumers to receive after May 1, without approval, pulp of domestic origin ordered and in transit before April 30.

Wool—M-87 Amend. #1 excludes certain types of olive drab wool wastes from restrictions of original order. Amend. #3 to M-73 (as amended and extended 7-4-42) clarifies "putting into process" of tops on any system other than worsted. Amend. #4 to M-73 (as amend. and ext. to 7-4-42) prohibits use of wool in manufacture of floor coverings, drapery and upholstery fabrics except for armed forces. M-73-a as

(*Continued on page 66*)

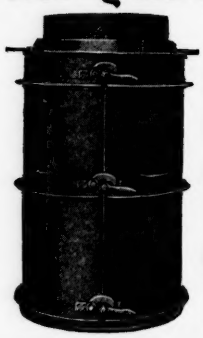
THE GEORGIA MARBLE COMPANY
Producers and Manufacturers of
GEORGIA MARBLE
TATE, GEORGIA
Atlanta-Chicago-Cleveland-Dallas-New York

GLAMORGAN
PIPE & FOUNDRY CO.
LYNCHBURG, VA.

GRANITE
WHITE
MOUNT AIRY
THE NORTH CAROLINA GRANITE CORP'N.
Mount Airy, N. C.

SAND—GRAVEL—BRICK
FILTER GRAVEL
Washed Sand and Gravel for Concrete
Roads and Buildings
Filter Gravel, all sizes—Building Bricks
FRIEND & CO., INC. River St., Petersburg, Va.

B. Mifflin Hood Co.
Chemical Stoneware:
ALL TYPES CHEMICAL BRICK AND SHAPES.
SPIRAL RINGS, DIAPHRAGM & RASCHIG RINGS.
Hood
Kil-Kraft Tiles
Write For Literature
Quarry Tile:
ALL TYPES QUARRY FLOOR & WALL TILE.
ROOF TILE AND FACE BRICK.
Plants: DAISY, TENN. ADAIRSVILLE, GA. NORWOOD & GULF, N.C.
Offices: ATLANTA, GA. DAISY, TENN. CHARLOTTE, N. C.

The "Quinn Standard"
FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 30 years service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that Quinn pipe forms and Quinn mixing formulas combine to produce the finest concrete pipe at lowest cost.
Quinn Heavy Duty Pipe Forms
Hand or wet process. Built to give more years of service—sizes for any diameter pipe from 12 to 84 inches—tongue and groove or bell end pipe—any length.
Quinn Medium Duty Pipe Forms
For making pipe 12 to 60 inches in diameter—any length.
Complete information, prices and estimates sent on request.
WRITE TODAY
QUINN WIRE & IRON WORKS 1605 12th ST. BOONE, IA.

Strand

1905 FLEXIBLE SHAFTS 1942

FLEXIBLE SHAFTS AND MACHINES

MANY TYPES AND SIZES

HORIZONTAL VERTICAL

ROTARY FILES

ROTARY CUTTERS

Attachments for

Hundreds of Operations

SEND FOR CATALOGUE.

N. A. STRAND & CO.

CHICAGO

5001-5009 NO. WOLCOTT AVE.

Coffing's

IMPROVED

Standard Type

Spur Geared CHAIN HOIST

Industry today needs Coffing's Model Y-C Ball Bearing Spur Geared Chain Hoists because they give years of trouble-free operation and speed up production in most lines of defense work. Built in six capacities from 1-2 to 4 tons and guaranteed against defective material and workmanship. Sold by leading distributors the country over. Contact your nearest dealer or write for General Catalog No. LG-5.

COFFING HOIST COMPANY

800 Walter Street Danville, Illinois

RATCHET LEVER HOISTS SPUR GEARED HOISTS

ELECTRIC HOISTS

LOAD BINDERS TROLLEYS DIFFERENTIALS

MYERS

BUILDS PUMPS FOR EVERY PURPOSE

Myers Pumps are suitable for industrial as well as domestic, agricultural and other applications.

For example, there are Sump Pumps for intermittent or emergency drainage service — Centrifugal Pumps for movement of acids, hot and cold water, brine and other liquids — Plunger and *EJECTO* type Pumps, capable of handling water to 9,000 GPH, for pressure tank and gravity service.

Exclusive design and construction features insure low operation cost and freedom from costly shutdowns and long interruptions for repairs.

Our Engineering Department will be glad to aid you on your Pumping problems. Write. No obligation, of course.

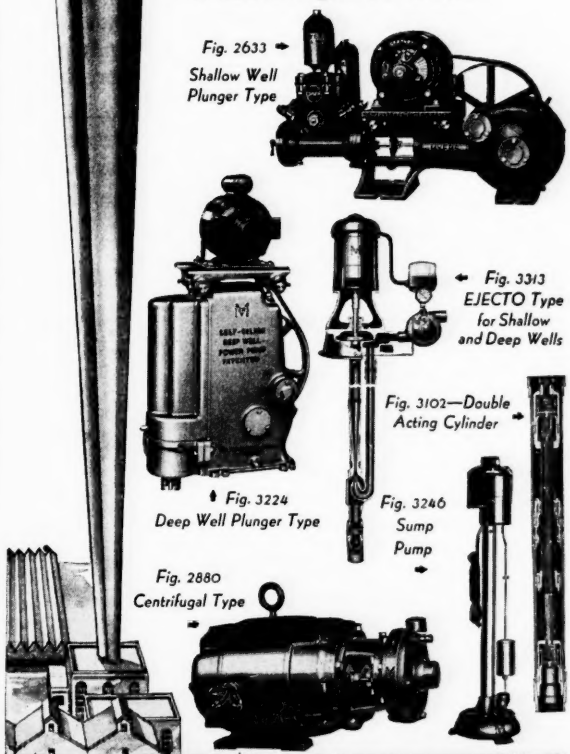


Fig. 2633 Shallow Well Plunger Type

Fig. 3313 EJECTO Type for Shallow and Deep Wells

Fig. 3102—Double Acting Cylinder

Fig. 3224 Deep Well Plunger Type

Fig. 3246 Sump Pump

Fig. 2880 Centrifugal Type

THE F. E. MYERS & BRO. CO.

• Manufacturers of Farm Operating Equipment •

ASHLAND, OHIO

PUMPS · WATER SYSTEMS
SPRAYERS · HAY TOOLS
DOOR HANGERS

Ramie and the South

(*Continued from page* 29)

the rotary washer. Experience has shown that 150 lbs. at a time can be handled with ease.

The fibre comes from the degumming process white, soft and silken in hand, all ready for "opening." Any modern textile mill can handle ramie processed by this method as readily as it can cotton or spun rayon and it may be processed similar to cotton, linen, rayon, wool, worsted or silk, without requiring special machinery, and may be run either 100 per cent ramie or in varying blends with other fibres.

At pre-war prices ramie staple produced in the way described was sold to textile mills at 40 cents per pound, which allowed a net profit of about 20 per cent. The results from spinning and weaving this fibre were comparable to fine linen products made from Belgian flax, which cost at pre-war prices around 50 cents per pound before any processing took place.

The above mentioned Manawul Process has resulted from a decade of research and development work on the part of Joseph A. Manahan, inventor of the process, and those associated with him among whom are Russell K. Boadwee, Vice President of Julius Kayser & Company; Commander Austin S. Kibbee, USN; George Manton, silk manufacturer; John H. Senior and Harmon B. Reihl of Proctor & Schwartz, Inc., Philadelphia, Pa.; P. Leroy Lamb, Treasurer, Nonquitt Mills, New Bedford, Mass.; James and Albert Gilet, Gilet Carbonizing Company, Lowell, Mass.; D. A. Servais, President, Belgian Spinning Company, Waltham, Mass., and the late Professor Clifford S. Griswold of Groton, Mass.

In the foregoing article I have sought to present only authoritative and factual information, and to tell as briefly as possible what has been accomplished in order to make available a textile fibre which is sorely needed today in the production of necessary war materials too numerous to mention in this limited space. It is essential, however, that the southern farmer be encouraged to grow ramie because foreign sources of supply have now been cut off, but also because it will furnish southern farmers with another staple and profitable cash crop. The growth of ramie also will utilize many acres of the South's idle lands and furnish the raw materials for development of another essential and profitable industry, not only essential now for the winning of the war but also most desirable as an important factor in establishing a successful post war economy.

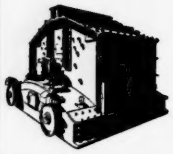
War Explosives and the South's Chemical Industry

(*Continued from page* 31)

probably is a serious under-estimate.

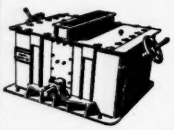
The United States faces a far greater problem than that. We must provide tremendous quantities of explosives not only for our own Army and Navy, but we must help our allies. It is safe to say that this country cannot produce an oversupply of explosives under present circumstances.

"PENNSYLVANIA" CRUSHERS



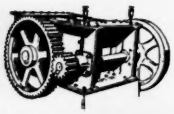
HAMMERMILLS

The Central Feed REVERSIBLE is the most outstanding advance in Hammermill design in 20 years. REVERSIBILITY is an exclusive "Pennsylvania" feature. For Limestones, Cement Rocks, Gypsums and wide variety of Chemicals and Industrial Minerals. Automatic hammer turning. Adjustable Cages . . . Tramp Iron protection. 25 to 800 T.P.H. Steelbuilt. Patented. Bulletin #1030.



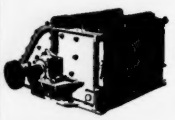
"IMPACTORS"

An advanced, new type that reduces by direct impact. For high Silicas, Clinkers, Slags, Chrome and Manganese Ores, Furnace Refractories, etc. Makes "cubing" particle shape, not "slivery". Several sizes. Patented. Bulletin #6000.



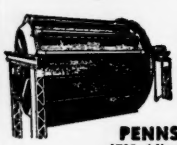
SINGLE ROLLS

An advanced design, specialized for Coal Preparation in Mines, Cleaning Plants, Gas Works and Power Plants. Sizes for Chemicals and Industrial Minerals. Automatic Tramp Iron Protection, quick adjustability from ¾" to 8" sizing. Powerful Steelbuilt construction. Patented. Bulletin #2006.



"GRANULATORS"

Granulate materials of medium hardness . . . Bituminous coal, . . . Gypsum Rock, etc., to produce sizes ⅛" to 2", with minimum fines and oversize. Operation practically dustless. Steelbuilt. Patented. Bulletin #9000.

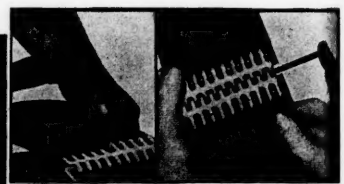


BRADFORD BREAKERS

Reduce R.O.M. for Stoker or Pulverizer feed with absolutely no oversize and low "overgrinding." Crush by gravity impact. Automatically eject, without damage, tramp iron, mine debris and hard rock. Low H.P. . . . slow speed . . . long life. Low up-keep. . . . rugged. . . . thoroughly dependable. 25 to 500 T.P.H. Steelbuilt. Patented. Bulletin #3004 and #3005.

PENNSYLVANIA CRUSHER CO.
1705 Liberty Trust Bldg., Philadelphia, Pa.
Offices in Principal Cities
Associated with Fraser & Chalmers Engineering Works, London, England.

BELT LACING and FASTENERS for transmission and conveyor belts



"JUST A HAMMER TO APPLY IT"

ALLIGATOR
Trade Mark Reg. U. S. Pat. Office
STEEL BELT LACING

World famed in general service for strength and long life. A flexible steel-hinged joint, smooth on both sides. 12 sizes. Made in steel, "Monel Metal" and non-magnetic alloys. Long lengths supplied if needed. Bulletin A-60 gives complete details.

FLEXCO HD
BELT FASTENERS AND RIP PLATES

For conveyor and elevator belts of all thicknesses, makes a tight butt joint of great strength and durability. Compresses belt ends between toothed cupped plates. Templates and FLEXCO Clips speed application. 6 sizes. Made in steel, "Monel Metal", non-magnetic and abrasion resisting alloys.

By using Flexco HD Rip Plates, damaged conveyor belting can be returned to satisfactory service. The extra length gives a long grip on edges of rip or patch. Flexco Tools and Rip Plate Tool are used. For complete information ask for Bulletin F-100.

Sold by supply houses everywhere

"CONVEYOR BELTS EASILY FASTENED"

FLEXIBLE STEEL LACING CO.
4690 Lexington St.
Chicago, Ill.

Advertising becomes increasingly important in war-time

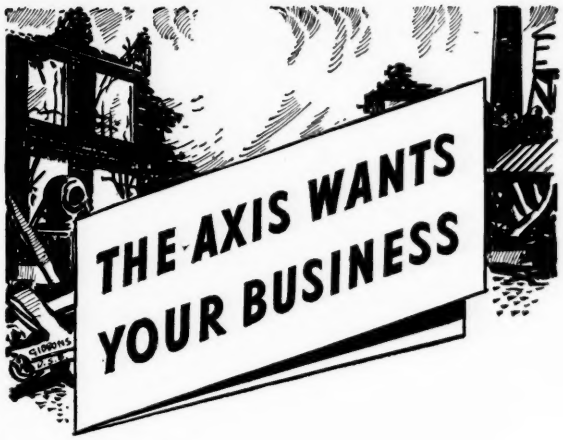
●

ADVERTISING can contribute to the war effort in many ways. It does not become a non-essential with the advent of war. In fact, its function becomes increasingly important, and it may undertake two major jobs. One of these, a job that is being shouldered more and more by advertisers, is that of providing information to those fighting on the home front and in the production fields—information which will help producers in every possible way to increase the output of fighting tools and to promote the more efficient use of products used by civilians.

Such a program might include information on better ways of using machinery, time-saving methods that can be adopted, labor-saving efforts made possible by new attachments or new operating tricks. Advertising agencies and trade papers can dig up scores of items of worth-while information, and the readers of advertisements will be grateful for having them passed along.

Doing this job successfully may call for the use of larger space than ordinarily would be used for a selling campaign. It is a kind of advertising that would specialize in long copy—long enough to tell the complete story.

NATHAN D. GOLDEN
Industrial Adviser
Department of Commerce



THIS is more than a war of mechanical monsters clashing in the night . . . more than a war of production.

It is a war for markets—*your* markets! The Axis wants your business—wants to destroy it for once and all.

With so much at stake, there is no doubt you will want to do everything you can to meet this Axis threat. Two ways are open: Speed production and BUY BONDS. The only answer to enemy tanks and planes is *more* American tanks and planes—and your regular, month-by-month purchases of Defense Bonds will help supply them. Buy now *and keep buying.*

HOW THE PAY-ROLL SAVINGS PLAN HELPS

When you install the Pay-Roll Savings Plan (approved by organized labor), you not only perform a service for your country but for your *employees.* Simple to install, the Plan provides for regular purchases of Defense Bonds through voluntary pay roll allotments.

Write for details *today!* Treasury Department, Section R, 709 Twelfth Street, NW., Washington, D. C.

U. S. SAVINGS
Bonds ★ Stamps

This space is a contribution to Victory by
MANUFACTURERS RECORD

CONSIDER THESE IRON BODY VALVES TO SAVE BRONZE

THE "KING-CLIP"—a husky iron body gate valve which employs bronze for the internal working parts only. For many services, the "King-clip" will serve equally as well as a bronze gate valve. Easily taken apart for cleaning. A valve that withstands hard and continuous usage.

THE "FERRENEWO"—an iron body globe valve that may be used instead of bronze valves for many services. All internal parts are made of non-corrodible alloys and are renewable. Seat and disc are regrindable. The "Ferrenewo" will give excellent service with negligible upkeep cost.

Investigate the adaptability of these iron body valves to your needs.

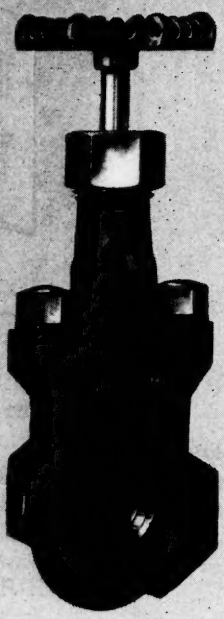


Fig. 1640
"King-clip" Gate Valve
150 lb. S.P.

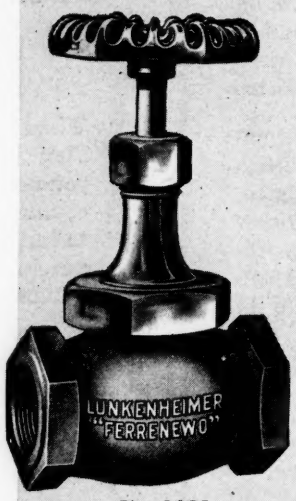


Fig. 1021
"Ferrenewo" Globe Valve
150 lb. S.P.

Since virtually all materials used in the manufacture of valves are on the list of critical materials, valve users are urged to furnish the highest possible preference ratings on their orders. This will be of mutual helpfulness.

ESTABLISHED 1862
THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
NEW YORK CHICAGO
BOSTON PHILADELPHIA
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK

LUNKENHEIMER VALVES

28-94C-62

Subcontractors Wanted

(*Continued from page 40*)

sets tubes, etc. Small quantities of each item are required, and production is to start as soon as possible. Contract by negotiation.

Ref. 13-24-2

A Penna. company requires subcontracting facilities on Small Square Threaded Blocks 5/8" x 5/8" x 1 1/8", Blind Hole Threaded 3/8"—16 n.c. No. 2. Commercial Bar Stock Steel is the material needed for this work. Quantity: 800,000. The rate of production is to be 4,000 per day, production to start as soon as possible. Equipment necessary: Facilities for Swaging and Machining to approximate sizes stated. Contract by negotiation.

Ref. 16-23-1

An Eastern Penna. concern is seeking subcontracting facilities for the production of Heavy Gray Iron Castings. Weights will approximate 10,000 to 12,000 lbs. each. These Castings are for low, high and intermediate Cylinders, Pistons and Beds for Triple Expansion Engines. Tool requirements are Heavy Engine Lathes, Large Planers and Vertical Boring Mills.

Ref. 16-14-1

A Philadelphia concern is seeking subcontracting facilities for Machining and Grinding of Special Ball Races. Equipment needed is Heavy Chucking Lathes, External and Internal Grinding.

Ref. 9-17-1

An Eastern Penna. concern requests several Steel Forgings and Machining of same on Crank Shafts and Component Parts. Equipment desired: Automatic Lathes, Grinders, Drop Forging Hammer, Hand Screw Machines, Automatic Screw Machines, Internal Grinders, Sizomatic Centerless Grinders, Lapping, Up-setting Machines, External Grinding Machine.

Ref. 9-21-1

A Philadelphia concern is looking for Machining Facilities to machine Bar Stock and Forgings. Equipment needed—Drill Presses, Lathes, Threading Machines, Gear Cutting Machines.

Synthetic Rubber Problems

(*Continued from page 26*)

capacity entirely financed by private industry sufficient to make and is actually making 25,000 tons annually of synthetic rubber largely from petroleum for specialty uses, which is all the capacity Germany had when the war broke out. And Germany had a large government subsidy provided to foster her synthetic rubber development. The surprising fact is that private industry has managed without subsidy and despite obstacles, to create as much synthetic rubber capacity as it has.

It is apparent that the same industry which accomplished this can, with proper government aid and cooperation, expand this capacity to meet our ultimate needs.

with Mall TRADE MARK CONSTANT HIGH SPEED GEARED HEAD GRINDERS

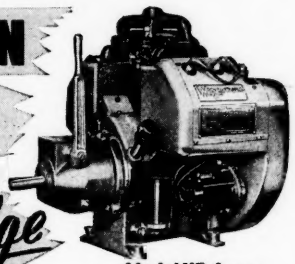
- Operate independently of all other tools
- Every R.P.M. in the electric motor is stepped up in the tool
- Constant High Speed under load
- Light weight tools—no motor to carry
- Extremely portable—Flexible shaft follows operator's movements
- Interchangeable tools for Grinding, Disc Cone and Drum Sanding, Wire Brushing, Polishing and Drilling can be changed in a jiffy.
- Puts war production on a Victory-Winning basis.

Write TODAY for literature and ask for a FREE Demonstration.

MALL TOOL COMPANY 7712 South Chicago Ave., CHICAGO, ILLINOIS

MALL AUTHORIZED DISTRIBUTORS—ALA.: Industrial Equip. & Service Co., Birmingham. J. H. Brady & Ass., Birmingham. FLA.: P. A. Neff, Miami. M. D. Moody Co., Jacksonville. GA.: E. T. Lowery, Atlanta. KY.: Neill-LaVielle Supply Co., Louisville. LA.: Fletcher Equipment Co., New Orleans. MISS.: Fred Keeton, Jackson. N. C.: Robert Springs, Hope Mills. Constructors Supply Co., Durham. Contractors Service Inc., Charlotte. W. B. Hughes, Asheville. OKLA.: Machine Tool & Supply Co., Tulsa. TENN.: Keith-Simmons Co., Nashville. Keith-Sinclair Co., Nashville. Auto Supply Co., Nashville. Hawkins Equipment Co., 1475 Thomas St., Memphis. Knox-Tenn Equipment Co., Knoxville. Range Auto Supply Co., Johnson City. Nixon-Hasselle Co., Chattanooga. TEX.: Regal Products Co., Abilene. Southern Supply Co., Dallas. Rex Supply Co., Houston.

WISCONSIN HEAVY-DUTY Air-Cooled ENGINES Come of Age



Model VE-4, 22 hp., 4 cyl., V-type Engine. Other types and sizes: 1 and 4 cyl., 1 to 35 hp.

"Old enough to vote", in terms of continuous production and development, Wisconsin heavy-duty air-cooled engines have also definitely *come of age* from the standpoints of industrial recognition and acceptance.

It has taken the hard proof of *service*, under the most trying operating conditions, in many lines of industry and power applications . . . to convince designing engineers, equipment manufacturers, and tough-skinned users that AIR-COOLED ENGINES, properly designed and built, *cause less trouble and provide higher productive capacity* than any other type of internal combustion unit within 35 hp. limits.

More than 300 machine manufacturers use Wisconsin Heavy-Duty Air-Cooled Engines as standard power equipment.

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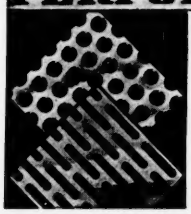

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CHARLES MUNDT & SONS

490 Johnston Ave., JERSEY CITY, N. J.

New Priorities

(*Continued from page* 60)

amended April 27 requires all men's and boy's clothing sold or delivered in this country after May 30 to comply with WPB restrictions except clothing in process of manufacture before May 30. Second-hand clothing is excepted.

Applications For Ratings Require Delivery Date—All applications for priority assistance which do not specify a required delivery date will hereafter be returned to the applicant by the War Production Board.

As a further step toward putting American industry under the Production Requirements Plan. W. P. B. will soon discontinue granting preference ratings on individual applications for material to be used in general manufacturing operations.

Effective immediately, no individual application from a manufacturer for materials to be incorporated in his products over a period of more than one month will be approved.

Virtually all American industries requiring priority assistance are expected to apply under the Production Requirements Plan for the quarter beginning July 1. Under the Production Requirements Plan, the producers file a single application to cover all of their materials requirements for a calendar quarter.

Producers whose annual volume of business amounts to less than $100,000 may file their PRP applications on a simplified form, PD-25X. All others must use the regular PD-25A application.

B. & O. Report Shows Marked Improvement

(*Continued from page* 46)

51.21 per cent after taxes, hire of equipment, and joint facility rents.

After deducting miscellaneous items such as rentals, loss on separately operated properties, etc., there was left available for fixed charges $52,599,-691.62.

Notwithstanding the higher wage rates, increased taxes, as well as greater cost for supplies and materials, the ratio of operating expenses to total revenues was reduced to 70.73 per cent as compared with 74.01 per cent for 1940.

The average train load for 1941 reached 984.02 tons, an increase of 41.86 tons over 1940.

Purchase of new equipment, together with additions and betterments, were made at a cost of $17,080,698.55.

There were acquired and placed in service four new and additional Diesel passenger locomotives; 4,763 new and additional steel freight cars, besides various other items of equipment including passenger-train cars, barges and scows, automotive equipment and units of work equipment.

There has been authorized further new and additional equipment for 1942 delivery of Diesel passenger locomotives, multiple-unit Diesel freight locomotives, as well as steel box cars and hopper cars, at an aggregate cost of approximately $9,500,000.

Railway tax accruals met by the Baltimore & Ohio Railroad Co. were an increase of 37.62 per cent over 1940. They absorbed twenty-four cents of every dollar of net operating revenue against which these taxes are a first charge.

While cosmopolitan in its general appeal, and modern *up to this moment* in its equipment, there is a peculiar flavor of The Old South here which Southerners are quick to note and appreciate. They feel at home and come back to us again and again.

Rates $3.00 *per day and up. Every room with bath or shower. Centrally located.*

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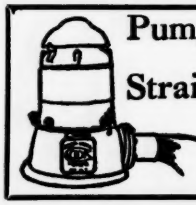

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FABRICATED INSULATION
Booklet—"Fabricated Insulation," 16 pages, illustrating and describing a new building product, known as Ren-O-Cell, made of cotton fibres (naturally water-repellent) and processed to be flameproof and fire-resistant; developed in conjunction with the U. S. Department of Agriculture, the product is being used extensively in defense housing projects; engineered-fabricated-sold by Universal Fabricated Products Co., 310 South Michigan Avenue, Chicago, Ill.
Reynolds Metals Company, Richmond, Va.

ATLAS PLATFORM TRUCKS
Bulletin No. 1261—illustrating and describing Atlas Platform Trucks.
The Atlas Car and Manufacturing Company, Cleveland, Ohio.

PROTECTIVE LIGHTING
Folder No. 101—"Plant Protection Begins with Floodlighting," dealing with urgent need for protective lighting around industrial plants, and illustrating various types of porcelain enameled floodlights available to meet demands for illumination in different localities; publication also introduces a new fixture known as Elipso Standlite, designed for high intensity and sharply defined lighting around property lines without illuminating buildings and grounds.
Goodrich Electric Company, 4600 Belle Plaine Avenue, Chicago, Ill.

KOPPERS PRODUCTS
Booklet—8 pages, summarizing all of Koppers' important products, plants and services, ranging from Koppers coals and coke to light oil plants and purification systems; from valves, castings, forgings, couplings, and piston rings to roofing, tar-base paints, and pressure-treated timber products; two pages are devoted to the uses, technical description and characteristics of tar acids, tar acid oil and coal tar solvents.
Koppers Company, Tar and Chemical Division, Koppers Building, Pittsburgh, Pa.

INTEGRAL-FURNACE BOILERS
Booklet—8 pages, illustrating and describing B&W Integral-Furnace Boiler, classes 9, 12, and 15 for lower capacities (as low as 135 horsepower on 9,000 pounds of steam per hour) and for stoker or oil firing; publication presents illustrations and drawings defining details of operation and construction features in this new design of boiler and indicating principal dimensions for various standard sizes; bulletin G-34-A.
The Babcock & Wilcox Company, 85 Liberty Street, New York, N. Y.

SPRING ENGINEERING MANUAL—
Book—"Manual of Spring Engineering," 132 pages, covering all types of springs, and dealing minutely with such subjects as spring materials, fatigue characteristics, temperature effects, static and dynamic loads, etc.; liberally illustrated and contains special Nomographic charts, tables and a complete analytical index.
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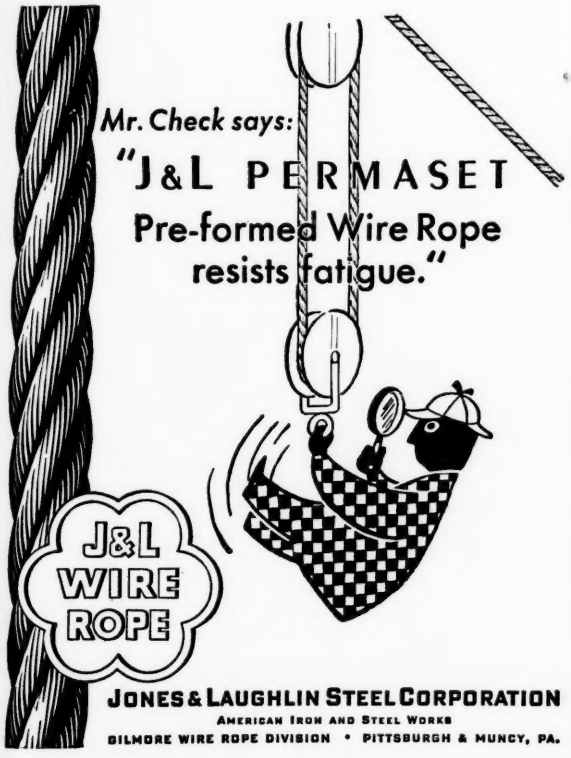

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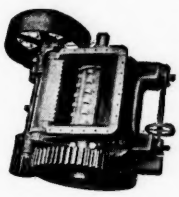

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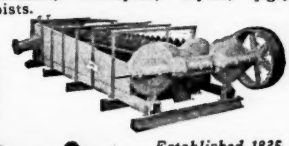

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